

Sanger Area 1

1995 11/5/67

Site 6

Dioxin data

(QA/QC data is  
in file room)

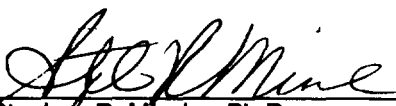
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## SUMMARY REPORT

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

IONICS INTERNATIONAL PROJECT 95-265  
CLIENT PROJECT 8168

Client ID	Ionics ID	File name
Method Blank	DFBLK B1-6-14	F11445
Lab Spike	LS B1-6-14	F11446
Lab Spike Duplicate	LSD B1-6-14	F11442
QA-1	3-65-1	F11447
QA-2	3-65-2	F11448
QA-3	3-65-3	F11451
QA-4	3-65-4	F11452
QA-5	3-65-5	F11414
QA-6	3-65-6	F11415
QA-7	3-65-7	F11416
QA-8	3-65-8	F11417
QA-9	3-65-9	F11418
QA-10	3-65-10	F11429
WA-1	3-65-11	F11453
WA-2	3-65-12	F11430
WA-3	3-65-13	F11422
WA-4	3-65-14	F11423
WP-1	3-65-15	F11431
DA-1	3-65-16	F11427
DA-3	3-65-17	F11428

  
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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-1**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-1**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.01	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	7.16	0.33	ND	ND	-	-
1,2,3,6,7,8-HxCDD	35.89	0.35	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	9.55	0.34	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	864.86	0.30	ND	6.42	103%	50-150
OCDD	26183.49	5.80	ND	11.46	92%	50-150
2,3,7,8-TCDF	1.93	0.11	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	2.65	0.02	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	3.83	0.02	ND	ND	-	-
1,2,3,4,7,8-HxCDF	68.72	1.13	ND	ND	-	-
1,2,3,6,7,8-HxCDF	26.09	1.09	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	18.74	1.27	ND	ND	-	-
1,2,3,7,8,9-HxCDF	12.93	1.41	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	509.26	1.75	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	53.49	2.08	ND	ND	-	-
OCDF	13559.65	5.83	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.01	<b>Total dioxins/furans</b>  <b>44974.25 ppb</b>
TOTAL PeCDD	2	0.36	0.01	
TOTAL HxCDD	5	168.03	0.35	
TOTAL HpCDD	2	1641.37	0.30	
TOTAL TCDF	7	5.48	0.11	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>74.17 ppb</b>
TOTAL PeCDF	7	31.89	0.02	
TOTAL HxCDF	8	685.77	1.41	
TOTAL HpCDF	4	2698.20	2.08	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-2**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-2**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.04	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	1.77	0.22	ND	ND	-	-
1,2,3,6,7,8-HxCDD	8.99	0.23	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	3.45	0.22	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	217.04	0.15	ND	6.42	103%	50-150
OCDD	5630.09	2.09	ND	11.46	92%	50-150
2,3,7,8-TCDF	1.65	0.02	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	2.49	0.02	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.03	ND	ND	-	-
1,2,3,4,7,8-HxCDF	26.98	0.28	ND	ND	-	-
1,2,3,6,7,8-HxCDF	4.36	0.27	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	2.58	0.32	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.35	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	120.60	0.20	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	10.21	0.23	ND	ND	-	-
OCDF	935.43	1.62	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	<b>Total dioxins/furans</b>  <b>7843.64 ppb</b>  <b>2,3,7,8-TCDD toxicity equivalent</b>  <b>15.146 ppb</b>
TOTAL TCDD	0	ND	0.01	
TOTAL PeCDD	0	ND	0.04	
TOTAL HxCDD	5	53.04	0.23	
TOTAL HpCDD	2	463.90	0.15	
TOTAL TCDF	3	2.78	0.02	
TOTAL PeCDF	8	18.80	0.03	
TOTAL HxCDF	8	214.66	0.35	
TOTAL HpCDF	4	524.95	0.23	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-3**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-3**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.02	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.07	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	0.95	0.11	ND	ND	-	-
1,2,3,6,7,8-HxCDD	3.85	0.11	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	2.31	0.11	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	87.76	0.09	ND	6.42	103%	50-150
OCDD	2293.87	0.35	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.30	0.03	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.03	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.03	ND	ND	-	-
1,2,3,4,7,8-HxCDF	2.65	0.61	ND	ND	-	-
1,2,3,6,7,8-HxCDF	1.48	0.59	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	1.25	0.69	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.76	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	52.36	0.65	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	1.98	0.77	ND	ND	-	-
OCDF	319.89	0.27	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	<b>Total dioxins/furans</b>  <b>3298.66 ppb</b>  <b>2,3,7,8-TCDD toxicity equivalent</b>  <b>5.315 ppb</b>
TOTAL TCDD	1	0.18	0.02	
TOTAL PeCDD	0	ND	0.07	
TOTAL HxCDD	6	34.84	0.11	
TOTAL HpCDD	2	290.60	0.09	
TOTAL TCDF	5	1.27	0.03	
TOTAL PeCDF	4	7.44	0.03	
TOTAL HxCDF	7	93.25	0.76	
TOTAL HpCDF	3	257.32	0.77	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-4**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-4**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.04	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.08	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	0.63	0.18	ND	ND	-	50-150
1,2,3,6,7,8-HxCDD	2.41	0.18	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	1.74	0.18	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDD	59.84	0.14	ND	6.42	103%	50-150
OCDD	1465.50	1.31	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.23	0.04	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.05	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.05	ND	ND	-	50-150
1,2,3,4,7,8-HxCDF	2.02	0.23	ND	ND	-	50-150
1,2,3,6,7,8-HxCDF	1.31	0.23	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	1.00	0.26	ND	ND	-	50-150
1,2,3,7,8,9-HxCDF	ND	0.29	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDF	36.08	0.40	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	1.57	0.48	ND	ND	-	50-150
OCDF	206.24	0.69	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.04	<b>Total dioxins/furans</b>  <b>2160.39 ppb</b>
TOTAL PeCDD	0	ND	0.08	
TOTAL HxCDD	5	24.25	0.18	
TOTAL HpCDD	2	198.32	0.14	
TOTAL TCDF	6	1.41	0.04	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>3.58 ppb</b>
TOTAL PeCDF	4	4.96	0.05	
TOTAL HxCDF	7	74.66	0.29	
TOTAL HpCDF	4	185.05	0.48	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-5**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-5**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.03	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.19	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	0.71	0.19	ND	ND	-	-
1,2,3,6,7,8-HxCDD	2.89	0.20	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	2.03	0.19	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	88.08	0.18	ND	6.42	103%	50-150
OCDD	1436.28	0.56	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.18	0.06	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.11	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	0.25	0.12	ND	ND	-	-
1,2,3,4,7,8-HxCDF	1.69	0.16	ND	ND	-	-
1,2,3,6,7,8-HxCDF	0.80	0.15	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	0.63	0.18	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.20	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	35.24	0.44	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	1.92	0.52	ND	ND	-	-
OCDF	211.02	0.30	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	<b>Total dioxins/furans</b>  <b>2481.77 ppb</b>  <b>2,3,7,8-TCDD toxicity equivalent</b>  <b>3.917 ppb</b>
TOTAL TCDD	1	0.12	0.03	
TOTAL PeCDD	1	0.27	0.19	
TOTAL HxCDD	5	19.38	0.20	
TOTAL HpCDD	2	193.66	0.18	
TOTAL TCDF	6	0.97	0.06	
TOTAL PeCDF	7	5.35	0.12	
TOTAL HxCDF	8	463.62	0.20	
TOTAL HpCDF	4	151.10	0.52	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-6**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-6**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.03	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.21	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	0.36	0.15	ND	ND	-	-
1,2,3,6,7,8-HxCDD	2.18	0.16	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	1.12	0.16	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	61.42	0.17	ND	6.42	103%	50-150
OCDD	1131.63	1.05	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.15	0.04	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.10	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.11	ND	ND	-	-
1,2,3,4,7,8-HxCDF	1.09	0.15	ND	ND	-	-
1,2,3,6,7,8-HxCDF	0.74	0.15	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	0.43	0.17	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.19	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	24.87	0.36	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.43	ND	ND	-	-
OCDF	167.07	0.49	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	0.10	0.03	<b>Total dioxins/furans</b>  <b>1581.43 ppb</b>
TOTAL PeCDD	1	0.16	0.21	
TOTAL HxCDD	6	14.22	0.16	
TOTAL HpCDD	2	134.25	0.17	
TOTAL TCDF	2	0.34	0.04	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>2.769 ppb</b>
TOTAL PeCDF	2	1.93	0.11	
TOTAL HxCDF	8	32.38	0.19	
TOTAL HpCDF	2	99.34	0.43	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.



**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-7**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-7**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.05	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.11	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	0.49	0.16	ND	ND	-	-
1,2,3,6,7,8-HxCDD	1.93	0.17	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	1.10	0.16	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	48.63	0.11	ND	6.42	103%	50-150
OCDD	915.27	0.84	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.21	0.09	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.04	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.05	ND	ND	-	-
1,2,3,4,7,8-HxCDF	1.20	0.14	ND	ND	-	-
1,2,3,6,7,8-HxCDF	0.75	0.14	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	0.51	0.16	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.18	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	23.28	0.30	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	1.22	0.36	ND	ND	-	-
OCDF	119.34	0.86	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	<b>Total dioxins/furans</b>  <b>1285.39 ppb</b>  <b>2,3,7,8-TCDD toxicity equivalent</b>  <b>2.384 ppb</b>
TOTAL TCDD	1	0.20	0.05	
TOTAL PeCDD	1	0.22	0.11	
TOTAL HxCDD	5	12.79	0.17	
TOTAL HpCDD	2	107.08	0.11	
TOTAL TCDF	2	0.50	0.09	
TOTAL PeCDF	4	3.81	0.05	
TOTAL HxCDF	8	35.92	0.18	
TOTAL HpCDF	4	90.26	0.36	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-8**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-8**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.11	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.15	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	0.43	0.25	ND	ND	-	-
1,2,3,6,7,8-HxCDD	2.34	0.26	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	0.89	0.26	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	63.45	0.10	ND	6.42	103%	50-150
OCDD	1272.54	0.82	ND	11.46	92%	50-150
2,3,7,8-TCDF	ND	0.07	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.06	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.06	ND	ND	-	-
1,2,3,4,7,8-HxCDF	1.30	0.19	ND	ND	-	-
1,2,3,6,7,8-HxCDF	0.87	0.19	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	0.49	0.22	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.24	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	27.66	0.65	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	1.43	0.77	ND	ND	-	-
OCDF	182.47	0.66	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	Total dioxins/furans  1781.67 ppb
TOTAL TCDD	1	0.23	0.11	
TOTAL PeCDD	0	ND	0.15	
TOTAL HxCDD	5	13.17	0.26	
TOTAL HpCDD	2	135.46	0.10	
TOTAL TCDF	0	ND	0.07	2,3,7,8-TCDD toxicity equivalent  3.013 ppb
TOTAL PeCDF	3	2.54	0.06	
TOTAL HxCDF	8	42.28	0.24	
TOTAL HpCDF	4	132.98	0.77	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-9**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-9**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.03	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.16	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	0.49	0.14	ND	ND	-	-
1,2,3,6,7,8-HxCDD	1.93	0.15	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	1.35	0.15	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	42.17	0.17	ND	6.42	103%	50-150
OCDD	984.88	0.80	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.26	0.03	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.05	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.05	ND	ND	-	-
1,2,3,4,7,8-HxCDF	1.68	0.21	ND	ND	-	-
1,2,3,6,7,8-HxCDF	1.01	0.20	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	0.59	0.23	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.26	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	21.77	0.43	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	0.96	0.51	ND	ND	-	-
OCDF	118.49	0.55	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	0.32	0.03	<b>Total dioxins/furans</b>  <b>1346.94 ppb</b>
TOTAL PeCDD	1	0.25	0.16	
TOTAL HxCDD	5	13.23	0.15	
TOTAL HpCDD	2	91.23	0.17	
TOTAL TCDF	1	0.26	0.03	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>2.484 ppb</b>
TOTAL PeCDF	3	3.18	0.05	
TOTAL HxCDF	8	45.56	0.26	
TOTAL HpCDF	4	89.54	0.51	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-10**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-10**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.04	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	1.03	0.21	ND	ND	-	-
1,2,3,6,7,8-HxCDD	4.05	0.22	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	2.18	0.22	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	58.54	0.12	ND	6.42	103%	50-150
OCDD	1654.21	2.06	ND	11.46	92%	50-150
2,3,7,8-TCDF	ND	0.04	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.10	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.11	ND	ND	-	-
1,2,3,4,7,8-HxCDF	4.87	0.46	ND	ND	-	-
1,2,3,6,7,8-HxCDF	1.70	0.44	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	1.57	0.51	ND	ND	-	-
1,2,3,7,8,9-HxCDF	0.99	0.57	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	40.48	0.17	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.20	ND	ND	-	-
OCDF	243.23	1.18	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	<b>Total dioxins/furans</b>  <b>2262.76 ppb</b>  <b>2,3,7,8-TCDD toxicity equivalent</b>  <b>4.526 ppb</b>
TOTAL TCDD	2	1.36	0.01	
TOTAL PeCDD	2	0.55	0.04	
TOTAL HxCDD	5	23.54	0.22	
TOTAL HpCDD	2	119.17	0.12	
TOTAL TCDF	4	2.18	0.04	
TOTAL PeCDF	4	8.19	0.11	
TOTAL HxCDF	5	46.79	0.57	
TOTAL HpCDF	2	163.54	0.20	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-1**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-11**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.03	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.08	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	7.92	0.24	ND	ND	-	-
1,2,3,6,7,8-HxCDD	45.03	0.25	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	8.21	0.25	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	942.33	0.33	ND	6.42	103%	50-150
OCDD	27324.77	2.25	ND	11.46	92%	50-150
2,3,7,8-TCDF	1.15	0.04	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.02	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	0.92	0.02	ND	ND	-	-
1,2,3,4,7,8-HxCDF	26.81	0.35	ND	ND	-	-
1,2,3,6,7,8-HxCDF	9.45	0.34	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	6.55	0.39	ND	ND	-	-
1,2,3,7,8,9-HxCDF	2.91	0.44	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	591.44	0.66	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	34.70	0.79	ND	ND	-	-
OCDF	13672.30	1.44	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	<b>Total dioxins/furans</b>  <b>48318.43 ppb</b>
TOTAL TCDD	1	0.20	0.03	
TOTAL PeCDD	0	ND	0.08	
TOTAL HxCDD	3	61.16	0.25	
TOTAL HpCDD	2	2774.81	0.33	
TOTAL TCDF	4	5.54	0.04	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>67.945 ppb</b>
TOTAL PeCDF	9	29.95	0.02	
TOTAL HxCDF	9	868.10	0.44	
TOTAL HpCDF	4	3581.60	0.79	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-2**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-12**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.06	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	0.74	0.11	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	4.78	0.35	ND	ND	-	-
1,2,3,6,7,8-HxCDD	20.72	0.36	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	8.16	0.36	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	491.45	0.24	ND	6.42	103%	50-150
OCDD	10579.19	3.10	ND	11.46	92%	50-150
2,3,7,8-TCDF	ND	0.06	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.13	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.14	ND	ND	-	-
1,2,3,4,7,8-HxCDF	7.11	0.61	ND	ND	-	-
1,2,3,6,7,8-HxCDF	6.10	0.59	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	10.00	0.69	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.76	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	306.10	0.86	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	ND	1.02	ND	ND	-	-
OCDF	5556.74	3.05	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.06	<b>Total dioxins/furans</b>  <b>19574.55 ppb</b>
TOTAL PeCDD	2	1.34	0.11	
TOTAL HxCDD	6	131.25	0.36	
TOTAL HpCDD	2	1409.05	0.24	
TOTAL TCDF	1	3.93	0.06	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>30.167 ppb</b>
TOTAL PeCDF	3	30.86	0.14	
TOTAL HxCDF	7	385.79	0.76	
TOTAL HpCDF	4	1476.39	1.02	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-3**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-13**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.04	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	2.09	0.12	ND	ND	-	50-150
1,2,3,6,7,8-HxCDD	9.85	0.13	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	2.98	0.12	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDD	204.65	0.12	ND	6.42	103%	50-150
OCDD	5883.84	1.26	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.53	0.01	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.02	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.02	ND	ND	-	50-150
1,2,3,4,7,8-HxCDF	9.92	0.16	ND	ND	-	50-150
1,2,3,6,7,8-HxCDF	5.42	0.15	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	2.93	0.18	ND	ND	-	50-150
1,2,3,7,8,9-HxCDF	ND	0.20	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDF	137.12	0.62	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	9.46	0.73	ND	ND	-	50-150
OCDF	1580.23	1.67	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.01	<b>Total dioxins/furans</b>  <b>9189.2 ppb</b>
TOTAL PeCDD	0	ND	0.04	
TOTAL HxCDD	6	74.48	0.13	
TOTAL HpCDD	2	632.49	0.12	
TOTAL TCDF	3	2.44	0.01	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>14.348 ppb</b>
TOTAL PeCDF	8	13.28	0.02	
TOTAL HxCDF	8	251.85	0.20	
TOTAL HpCDF	4	750.59	0.73	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-4**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-14**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.03	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	1.24	0.29	ND	ND	-	-
1,2,3,6,7,8-HxCDD	4.07	0.30	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	1.97	0.29	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	69.25	0.11	ND	6.42	103%	50-150
OCDD	1641.75	1.23	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.19	0.01	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.01	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.01	ND	ND	-	-
1,2,3,4,7,8-HxCDF	2.62	0.68	ND	ND	-	-
1,2,3,6,7,8-HxCDF	3.82	0.66	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	ND	0.76	ND	ND	-	-
1,2,3,7,8,9-HxCDF	2.26	0.85	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	65.52	0.50	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	1.74	0.59	ND	ND	-	-
OCDF	252.71	0.91	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	4	0.29	0.01	<b>Total dioxins/furans</b>  <b>2572.4 ppb</b>
TOTAL PeCDD	5	1.04	0.03	
TOTAL HxCDD	5	37.81	0.30	
TOTAL HpCDD	2	220.07	0.11	
TOTAL TCDF	5	1.56	0.01	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>4.877 ppb</b>
TOTAL PeCDF	4	6.74	0.01	
TOTAL HxCDF	6	140.69	0.85	
TOTAL HpCDF	3	269.75	0.59	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.



**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WP-1**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-15**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	1.74	0.02	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.03	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	70.10	0.28	ND	ND	-	50-150
1,2,3,6,7,8-HxCDD	237.87	0.30	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	122.76	0.29	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDD	2529.79	0.16	ND	6.42	103%	50-150
OCDD	19652.20	2.91	ND	11.46	92%	50-150
2,3,7,8-TCDF	2.49	0.07	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.04	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.04	ND	ND	-	50-150
1,2,3,4,7,8-HxCDF	84.52	1.04	ND	ND	-	50-150
1,2,3,6,7,8-HxCDF	31.10	1.01	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	32.87	1.18	ND	ND	-	50-150
1,2,3,7,8,9-HxCDF	12.48	1.30	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDF	1832.21	0.38	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	115.26	0.45	ND	ND	-	50-150
OCDF	18103.05	2.85	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	7	14.31	0.02	<b>Total dioxins/furans</b>  <b>55675.11 ppb</b>
TOTAL PeCDD	11	59.89	0.03	
TOTAL HxCDD	7	1992.56	0.30	
TOTAL HpCDD	2	7222.58	0.16	
TOTAL TCDF	8	23.73	0.07	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>143.685 ppb</b>
TOTAL PeCDF	9	130.28	0.04	
TOTAL HxCDF	9	3834.16	0.00	
TOTAL HpCDF	3	4642.35	0.45	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: DA-1**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-16**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.06	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	ND	0.09	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.09	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	ND	0.09	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	3.08	0.04	ND	6.42	103%	50-150
OCDD	36.55	0.07	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.05	0.02	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.02	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.02	ND	ND	-	-
1,2,3,4,7,8-HxCDF	0.06	0.05	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.05	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	ND	0.05	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.06	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	0.87	0.08	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.10	ND	ND	-	-
OCDF	4.03	0.06	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	2	0.12	0.01	<b>Total dioxins/furans</b>  <b>50.47 ppb</b>
TOTAL PeCDD	0	ND	0.06	
TOTAL HxCDD	1	0.11	0.09	
TOTAL HpCDD	2	5.47	0.04	
TOTAL TCDF	2	0.07	0.02	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>0.092 ppb</b>
TOTAL PeCDF	2	0.14	0.02	
TOTAL HxCDF	3	0.58	0.06	
TOTAL HpCDF	2	3.39	0.10	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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**IONICS INTERNATIONAL, INC.**  
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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: DA-3**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-17**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.02	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.02	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	ND	0.08	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.08	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	ND	0.08	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	2.86	0.03	ND	6.42	103%	50-150
OCDD	30.45	0.10	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.04	0.01	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.02	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.02	ND	ND	-	-
1,2,3,4,7,8-HxCDF	0.10	0.02	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.02	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	ND	0.02	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.03	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	1.11	0.08	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.10	ND	ND	-	-
OCDF	3.87	0.11	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	0.12	0.02	<b>Total dioxins/furans</b>  <b>44.34 ppb</b>
TOTAL PeCDD	0	ND	0.02	
TOTAL HxCDD	1	0.38	0.08	
TOTAL HpCDD	2	5.63	0.03	
TOTAL TCDF	3	0.15	0.01	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>0.088 ppb</b>
TOTAL PeCDF	0	ND	0.02	
TOTAL HxCDF	2	0.37	0.03	
TOTAL HpCDF	2	3.38	0.10	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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# **ANALYSIS REPORT**

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-1**

**SAMPLE ANALYSIS  
REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-1**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/14/95

Sample size: 10.04 g  
 Matrix: Soil  
 Origin: Site G

File: F11447  
 Ret check: F11438  
 Daily cal: F11439  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-		U
1,2,3,7,8-PeCDD	ND	0.01	-		U
1,2,3,4,7,8-HxCDD	7.16	0.33	1.28	32:17	
1,2,3,6,7,8-HxCDD	35.89	0.35	1.26	32:24	
1,2,3,7,8,9-HxCDD	9.55	0.34	1.29	32:53	
1,2,3,4,6,7,8-HpCDD	864.86	0.30	1.07	37:16	E
OCDD	26183.49	5.80	0.92	42:04	E
2,3,7,8-TCDF	1.93	0.11	0.80	22:18	
1,2,3,7,8-PeCDF	2.65	0.02	1.62	26:20	
2,3,4,7,8-PeCDF	3.83	0.02	1.66	27:20	
1,2,3,4,7,8-HxCDF	68.72	1.13	1.32	31:11	E
1,2,3,6,7,8-HxCDF	26.09	1.09	1.30	31:21	
2,3,4,6,7,8-HxCDF	18.74	1.27	1.32	32:02	
1,2,3,7,8,9-HxCDF	12.93	1.41	1.15	33:19	
1,2,3,4,6,7,8-HpCDF	509.26	1.75	1.07	35:43	E
1,2,3,4,7,8,9-HpCDF	53.49	2.08	1.08	37:47	E
OCDF	13559.65	5.83	0.93	42:12	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.01	U
TOTAL PeCDD	2	0.36	0.01	J
TOTAL HxCDD	5	168.03	0.35	E
TOTAL HpCDD	2	1641.37	0.30	E
TOTAL TCDF	7	5.48	0.11	
TOTAL PeCDF	7	31.89	0.02	E
TOTAL HxCDF	8	685.77	1.41	E
TOTAL HpCDF	4	2698.20	2.08	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-1**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-1**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/14/95

Sample size: 10.04 g  
 Matrix: Soil  
 Origin: Site G

File: F11447  
 Ret check: F11438  
 Daily cal: F11439  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.05	81.4	0.85	22:17	-
13C12-2,3,7,8-TCDD	16.46	330.5	0.70	22:54	Y
13C12-1,2,3,6,7,8-HxCDD	4.23	84.9	1.36	32:23	-
13C12-1,2,3,4,6,7,8-HpCDF	4.67	46.9	1.20	35:41	-
13C12-OCDD	0.45	4.5	2.89	42:04	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.47	99.0	22:56	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:43	-
13C12-1,2,3,7,8,9-HxCDD	1.37	32:52	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-2**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-2**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/14/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11448  
 Ret check: F11438  
 Daily cal: F11439  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-		U
1,2,3,7,8-PeCDD	ND	0.04	-		U
1,2,3,4,7,8-HxCDD	1.77	0.22	1.39	32:25	J
1,2,3,6,7,8-HxCDD	8.99	0.23	1.26	32:32	
1,2,3,7,8,9-HxCDD	3.45	0.22	1.15	33:00	
1,2,3,4,6,7,8-HpCDD	217.04	0.15	1.06	37:10	E
OCDD	5630.09	2.09	0.93	41:56	E
2,3,7,8-TCDF	1.65	0.02	0.75	22:23	
1,2,3,7,8-PeCDF	2.49	0.02	1.61	26:28	
2,3,4,7,8-PeCDF	ND	0.03	-		U
1,2,3,4,7,8-HxCDF	26.98	0.28	1.29	31:21	
1,2,3,6,7,8-HxCDF	4.36	0.27	1.21	31:29	
2,3,4,6,7,8-HxCDF	2.58	0.32	1.24	32:16	
1,2,3,7,8,9-HxCDF	ND	0.35	-		U
1,2,3,4,6,7,8-HpCDF	120.60	0.20	1.06	35:44	E
1,2,3,4,7,8,9-HpCDF	10.21	0.23	1.04	37:46	
OCDF	935.43	1.62	0.92	42:03	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.01	U
TOTAL PeCDD	0	ND	0.04	U
TOTAL HxCDD	5	53.04	0.23	E
TOTAL HpCDD	2	463.90	0.15	E
TOTAL TCDF	3	2.78	0.02	
TOTAL PeCDF	8	18.80	0.03	
TOTAL HxCDF	8	214.66	0.35	E
TOTAL HpCDF	4	524.95	0.23	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-2**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-2**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/14/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11448  
 Ret check: F11438  
 Daily cal: F11439  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.99	80.4	0.87	22:22	-
13C12-2,3,7,8-TCDD	10.74	216.2	0.66	23:00	Y
13C12-1,2,3,6,7,8-HxCDD	3.76	75.8	1.35	32:31	-
13C12-1,2,3,4,6,7,8-HpCDF	4.38	44.1	1.12	35:43	-
13C12-OCDD	1.27	12.8	0.95	41:55	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.16	86.9	23:01	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.88	22:49	-
13C12-1,2,3,7,8,9-HxCDD	1.27	32:59	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.



**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-3**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-3**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/15/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11451  
 Ret check: F11449  
 Daily cal: F11450  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.02	-	00:00	U
1,2,3,7,8-PeCDD	ND	0.07	-	00:00	U
1,2,3,4,7,8-HxCDD	0.95	0.11	1.31	32:19	J
1,2,3,6,7,8-HxCDD	3.85	0.11	1.35	32:27	
1,2,3,7,8,9-HxCDD	2.31	0.11	1.40	32:53	J
1,2,3,4,6,7,8-HpCDD	87.76	0.09	1.03	37:04	E
OCDD	2293.87	0.35	0.92	41:45	E
2,3,7,8-TCDF	0.30	0.03	0.79	22:18	J
1,2,3,7,8-PeCDF	ND	0.03	-	00:00	U
2,3,4,7,8-PeCDF	ND	0.03	-	00:00	U
1,2,3,4,7,8-HxCDF	2.65	0.61	1.41	31:14	
1,2,3,6,7,8-HxCDF	1.48	0.59	1.32	31:23	J
2,3,4,6,7,8-HxCDF	1.25	0.69	1.23	32:12	J
1,2,3,7,8,9-HxCDF	ND	0.76	-	00:00	U
1,2,3,4,6,7,8-HpCDF	52.36	0.65	1.07	35:38	E
1,2,3,4,7,8,9-HpCDF	1.98	0.77	1.05	37:43	J
OCDF	319.89	0.27	0.92	41:54	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.18	0.02	J
TOTAL PeCDD	0	ND	0.07	U
TOTAL HxCDD	6	34.84	0.11	
TOTAL HpCDD	2	290.60	0.09	E
TOTAL TCDF	5	1.27	0.03	
TOTAL PeCDF	4	7.44	0.03	
TOTAL HxCDF	7	93.25	0.76	E
TOTAL HpCDF	3	257.32	0.77	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-3**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-3**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/15/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11451  
 Ret check: F11449  
 Daily cal: F11450  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.05	81.2	0.84	22:17	-
13C12-2,3,7,8-TCDD	6.07	121.6	0.75	22:55	Y
13C12-1,2,3,6,7,8-HxCDD	4.14	82.9	1.38	32:26	-
13C12-1,2,3,4,6,7,8-HpCDF	5.06	50.7	1.10	35:37	-
13C12-OCDD	1.55	15.5	0.93	41:43	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.27	90.8	22:56	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	22:42	-
13C12-1,2,3,7,8,9-HxCDD	1.38	32:52	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-4**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-4**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/15/95

Sample size: 10.04 g  
 Matrix: Soil  
 Origin: Site G

File: F11452  
 Ret check: F11449  
 Daily cal: F11450  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.04	-		U
1,2,3,7,8-PeCDD	ND	0.08	-		U
1,2,3,4,7,8-HxCDD	0.63	0.18	1.24	32:20	J
1,2,3,6,7,8-HxCDD	2.41	0.18	1.27	32:27	J
1,2,3,7,8,9-HxCDD	1.74	0.18	1.50	32:53	J
1,2,3,4,6,7,8-HpCDD	59.84	0.14	1.04	37:03	E
OCDD	1465.50	1.31	0.92	41:42	E
2,3,7,8-TCDF	0.23	0.04	0.75	22:17	J
1,2,3,7,8-PeCDF	ND	0.05	-		U
2,3,4,7,8-PeCDF	ND	0.05	-		U
1,2,3,4,7,8-HxCDF	2.02	0.23	1.28	31:15	J
1,2,3,6,7,8-HxCDF	1.31	0.23	1.23	31:25	J
2,3,4,6,7,8-HxCDF	1.00	0.26	1.28	32:12	J
1,2,3,7,8,9-HxCDF	ND	0.29	-		U
1,2,3,4,6,7,8-HpCDF	36.08	0.40	1.07	35:37	
1,2,3,4,7,8,9-HpCDF	1.57	0.48	1.02	37:43	J
OCDF	206.24	0.69	0.92	41:52	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.04	U
TOTAL PeCDD	0	ND	0.08	U
TOTAL HxCDD	5	24.25	0.18	
TOTAL HpCDD	2	198.32	0.14	E
TOTAL TCDF	6	1.41	0.04	
TOTAL PeCDF	4	4.96	0.05	
TOTAL HxCDF	7	74.66	0.29	E
TOTAL HpCDF	4	185.05	0.48	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-4**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-4**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/15/95

Sample size: 10.04 g  
 Matrix: Soil  
 Origin: Site G

File: F11452  
 Ret check: F11449  
 Daily cal: F11450  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.01	80.6	0.84	22:17	-
13C12-2,3,7,8-TCDD	5.44	109.2	0.77	22:55	-
13C12-1,2,3,6,7,8-HxCDD	3.65	73.2	1.38	32:26	-
13C12-1,2,3,4,6,7,8-HpCDF	4.24	42.6	1.08	35:36	-
13C12-OCDD	1.58	15.9	1.01	41:40	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.20	88.2	22:56	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	22:42	-
13C12-1,2,3,7,8,9-HxCDD	1.23	32:52	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-5**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-5**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11414  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	-		U
1,2,3,7,8-PeCDD	ND	0.19	-		U
1,2,3,4,7,8-HxCDD	0.71	0.19	1.32	32:21	J
1,2,3,6,7,8-HxCDD	2.89	0.20	1.26	32:28	
1,2,3,7,8,9-HxCDD	2.03	0.19	1.44	32:50	J
1,2,3,4,6,7,8-HpCDD	88.08	0.18	1.02	37:00	E
OCDD	1436.28	0.56	0.93	41:43	E
2,3,7,8-TCDF	0.18	0.06	0.82	22:12	J
1,2,3,7,8-PeCDF	ND	0.11	-		U
2,3,4,7,8-PeCDF	0.25	0.12	1.55	27:14	J
1,2,3,4,7,8-HxCDF	1.69	0.16	1.40	31:14	J
1,2,3,6,7,8-HxCDF	0.80	0.15	1.33	31:23	J
2,3,4,6,7,8-HxCDF	0.63	0.18	1.14	32:13	J
1,2,3,7,8,9-HxCDF	ND	0.20	-		U
1,2,3,4,6,7,8-HpCDF	35.24	0.44	1.02	35:34	
1,2,3,4,7,8,9-HpCDF	1.92	0.52	1.02	37:38	J
OCDF	211.02	0.30	0.91	41:51	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.12	0.03	J
TOTAL PeCDD	1	0.27	0.19	J
TOTAL HxCDD	5	19.38	0.20	
TOTAL HpCDD	2	193.66	0.18	E
TOTAL TCDF	6	0.97	0.06	J
TOTAL PeCDF	7	5.35	0.12	
TOTAL HxCDF	8	463.62	0.20	E
TOTAL HpCDF	4	151.10	0.52	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-5**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-5**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11414  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.91	78.4	0.85	22:12	-
13C12-2,3,7,8-TCDD	5.38	108.0	0.75	22:50	-
13C12-1,2,3,6,7,8-HxCDD	3.31	66.4	1.32	32:26	-
13C12-1,2,3,4,6,7,8-HpCDF	5.02	50.4	1.17	35:34	-
13C12-OCDD	2.50	25.1	1.05	41:40	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.23	89.3	51:00	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:37	-
13C12-1,2,3,7,8,9-HxCDD	1.24	32:49	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-6**

**SAMPLE ANALYSIS  
REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-6**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.01 g  
 Matrix: Soil  
 Origin: Site G

File: F11415  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	-		U
1,2,3,7,8-PeCDD	ND	0.21	-		U
1,2,3,4,7,8-HxCDD	0.36	0.15	1.19	32:15	J
1,2,3,6,7,8-HxCDD	2.18	0.16	1.38	32:22	J
1,2,3,7,8,9-HxCDD	1.12	0.16	1.40	32:47	J
1,2,3,4,6,7,8-HpCDD	61.42	0.17	1.06	36:57	E
OCDD	1131.63	1.05	0.93	41:35	E
2,3,7,8-TCDF	0.15	0.04	0.73	22:09	J
1,2,3,7,8-PeCDF	ND	0.10	-		U
2,3,4,7,8-PeCDF	ND	0.11	-		U
1,2,3,4,7,8-HxCDF	1.09	0.15	1.20	31:10	J
1,2,3,6,7,8-HxCDF	0.74	0.15	1.20	31:18	J
2,3,4,6,7,8-HxCDF	0.43	0.17	1.26	32:01	J
1,2,3,7,8,9-HxCDF	ND	0.19	-		U
1,2,3,4,6,7,8-HpCDF	24.87	0.36	1.04	35:31	
1,2,3,4,7,8,9-HpCDF	ND	0.43	-		U
OCDF	167.07	0.49	0.92	41:44	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.10	0.03	J
TOTAL PeCDD	1	0.16	0.21	J
TOTAL HxCDD	6	14.22	0.16	
TOTAL HpCDD	2	134.25	0.17	E
TOTAL TCDF	2	0.34	0.04	J
TOTAL PeCDF	2	1.93	0.11	
TOTAL HxCDF	8	32.38	0.19	
TOTAL HpCDF	2	99.34	0.43	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-6**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-6**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.01 g  
 Matrix: Soil  
 Origin: Site G

File: F11415  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.14	82.8	0.81	22:08	-
13C12-2,3,7,8-TCDD	5.16	103.4	0.79	22:48	-
13C12-1,2,3,6,7,8-HxCDD	3.62	72.5	1.37	32:21	-
13C12-1,2,3,4,6,7,8-HpCDF	5.16	51.6	1.19	35:30	-
13C12-OCDD	1.83	18.3	1.10	41:34	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.33	93.4	22:48	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:35	-
13C12-1,2,3,7,8,9-HxCDD	1.30	32:46	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.



**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-7**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-7**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11416  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05	-		U
1,2,3,7,8-PeCDD	ND	0.11	-		U
1,2,3,4,7,8-HxCDD	0.49	0.16	1.24	32:14	J
1,2,3,6,7,8-HxCDD	1.93	0.17	1.26	32:20	J
1,2,3,7,8,9-HxCDD	1.10	0.16	1.36	32:45	J
1,2,3,4,6,7,8-HpCDD	48.63	0.11	1.06	36:54	
OCDD	915.27	0.84	0.92	41:35	E
2,3,7,8-TCDF	0.21	0.09	0.74	22:13	J
1,2,3,7,8-PeCDF	ND	0.04	-		U
2,3,4,7,8-PeCDF	ND	0.05	-		U
1,2,3,4,7,8-HxCDF	1.20	0.14	1.29	31:08	J
1,2,3,6,7,8-HxCDF	0.75	0.14	1.20	31:17	J
2,3,4,6,7,8-HxCDF	0.51	0.16	1.33	31:59	J
1,2,3,7,8,9-HxCDF	ND	0.18	-		U
1,2,3,4,6,7,8-HpCDF	23.28	0.30	1.07	35:29	
1,2,3,4,7,8,9-HpCDF	1.22	0.36	1.11	37:33	J
OCDF	119.34	0.86	0.92	41:47	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.20	0.05	J
TOTAL PeCDD	1	0.22	0.11	J
TOTAL HxCDD	5	12.79	0.17	
TOTAL HpCDD	2	107.08	0.11	E
TOTAL TCDF	2	0.50	0.09	J
TOTAL PeCDF	4	3.81	0.05	
TOTAL HxCDF	8	35.92	0.18	
TOTAL HpCDF	4	90.26	0.36	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-7**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-7**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11416  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.14	83.0	0.81	22:12	-
13C12-2,3,7,8-TCDD	5.18	103.9	0.78	22:50	-
13C12-1,2,3,6,7,8-HxCDD	3.71	74.5	1.35	32:19	-
13C12-1,2,3,4,6,7,8-HpCDF	4.93	49.5	1.16	35:28	-
13C12-OCDD	1.88	18.9	1.05	41:34	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.22	89.2	22:51	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	22:38	-
13C12-1,2,3,7,8,9-HxCDD	1.28	32:44	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-8**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-8**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11417  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.11	-		U
1,2,3,7,8-PeCDD	ND	0.15	-		U
1,2,3,4,7,8-HxCDD	0.43	0.25	1.34	32:15	J
1,2,3,6,7,8-HxCDD	2.34	0.26	1.33	32:22	J
1,2,3,7,8,9-HxCDD	0.89	0.26	1.24	32:48	J
1,2,3,4,6,7,8-HpCDD	63.45	0.10	1.07	36:59	E
OCDD	1272.54	0.82	0.93	41:36	E
2,3,7,8-TCDF	ND	0.07	-		U
1,2,3,7,8-PeCDF	ND	0.06	-		U
2,3,4,7,8-PeCDF	ND	0.06	-		U
1,2,3,4,7,8-HxCDF	1.30	0.19	1.42	31:10	J
1,2,3,6,7,8-HxCDF	0.87	0.19	1.26	31:18	J
2,3,4,6,7,8-HxCDF	0.49	0.22	1.32	32:00	J
1,2,3,7,8,9-HxCDF	ND	0.24	-		U
1,2,3,4,6,7,8-HpCDF	27.66	0.65	1.06	35:34	
1,2,3,4,7,8,9-HpCDF	1.43	0.77	1.17	37:38	J
OCDF	182.47	0.66	0.89	41:47	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.23	0.11	J
TOTAL PeCDD	0	ND	0.15	U
TOTAL HxCDD	5	13.17	0.26	
TOTAL HpCDD	2	135.46	0.10	E
TOTAL TCDF	0	ND	0.07	U
TOTAL PeCDF	3	2.54	0.06	
TOTAL HxCDF	8	42.28	0.24	
TOTAL HpCDF	4	132.98	0.77	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-8**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-8**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11417  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.91	78.7	0.86	22:13	-
13C12-2,3,7,8-TCDD	5.07	102.1	0.76	22:52	-
13C12-1,2,3,6,7,8-HxCDD	3.54	71.2	1.37	32:20	-
13C12-1,2,3,4,6,7,8-HpCDF	4.37	44.0	1.13	35:33	-
13C12-OCDD	1.80	18.1	1.03	41:36	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.26	90.9	22:53	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.84	22:39	-
13C12-1,2,3,7,8,9-HxCDD	1.27	32:47	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-9**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-9**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.04 g  
 Matrix: Soil  
 Origin: Site G

File: F11418  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	-		U
1,2,3,7,8-PeCDD	ND	0.16	-		U
1,2,3,4,7,8-HxCDD	0.49	0.14	1.20	32:18	J
1,2,3,6,7,8-HxCDD	1.93	0.15	1.35	32:26	J
1,2,3,7,8,9-HxCDD	1.35	0.15	1.40	32:51	J
1,2,3,4,6,7,8-HpCDD	42.17	0.17	1.05	37:01	
OCDD	984.88	0.80	0.92	41:35	E
2,3,7,8-TCDF	0.26	0.03	0.72	22:15	J
1,2,3,7,8-PeCDF	ND	0.05	-		U
2,3,4,7,8-PeCDF	ND	0.05	-		U
1,2,3,4,7,8-HxCDF	1.68	0.21	1.36	31:14	J
1,2,3,6,7,8-HxCDF	1.01	0.20	1.23	31:23	J
2,3,4,6,7,8-HxCDF	0.59	0.23	1.07	32:05	J
1,2,3,7,8,9-HxCDF	ND	0.26	-		U
1,2,3,4,6,7,8-HpCDF	21.77	0.43	1.07	35:36	
1,2,3,4,7,8,9-HpCDF	0.96	0.51	1.04	37:39	J
OCDF	118.49	0.55	0.92	41:47	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.32	0.03	J
TOTAL PeCDD	1	0.25	0.16	J
TOTAL HxCDD	5	13.23	0.15	
TOTAL HpCDD	2	91.23	0.17	E
TOTAL TCDF	1	0.26	0.03	J
TOTAL PeCDF	3	3.18	0.05	
TOTAL HxCDF	8	45.56	0.26	
TOTAL HpCDF	4	89.54	0.51	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**IONICS INTERNATIONAL, INC.**  
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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-9**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-9**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.04 g  
 Matrix: Soil  
 Origin: Site G

File: F11418  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.01	80.5	0.83	22:14	-
13C12-2,3,7,8-TCDD	5.27	105.9	0.75	22:53	-
13C12-1,2,3,6,7,8-HxCDD	3.99	80.2	1.35	32:25	-
13C12-1,2,3,4,6,7,8-HpCDF	4.63	46.5	1.14	35:35	-
13C12-OCDD	1.89	19.0	0.97	41:34	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.18	87.7	22:54	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:40	-
13C12-1,2,3,7,8,9-HxCDD	1.34	32:51	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-10**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-10**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.06 g  
 Matrix: Soil  
 Origin: Site G

File: F11429  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-		U
1,2,3,7,8-PeCDD	ND	0.04	-		U
1,2,3,4,7,8-HxCDD	1.03	0.21	1.39	32:52	J
1,2,3,6,7,8-HxCDD	4.05	0.22	1.43	32:59	
1,2,3,7,8,9-HxCDD	2.18	0.22	1.12	33:24	J
1,2,3,4,6,7,8-HpCDD	58.54	0.12	1.05	37:25	E
OCDD	1654.21	2.06	0.92	41:57	E
2,3,7,8-TCDF	ND	0.04	-		U
1,2,3,7,8-PeCDF	ND	0.10	-		U
2,3,4,7,8-PeCDF	ND	0.11	-		U
1,2,3,4,7,8-HxCDF	4.87	0.46	1.29	31:54	
1,2,3,6,7,8-HxCDF	1.70	0.44	1.34	32:01	J
2,3,4,6,7,8-HxCDF	1.57	0.51	1.43	32:46	J
1,2,3,7,8,9-HxCDF	0.99	0.57	1.42	33:46	J
1,2,3,4,6,7,8-HpCDF	40.48	0.17	1.06	36:07	
1,2,3,4,7,8,9-HpCDF	ND	0.20	-		U
OCDF	243.23	1.18	0.91	42:08	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	2	1.36	0.01	
TOTAL PeCDD	2	0.55	0.04	J
TOTAL HxCDD	5	23.54	0.22	
TOTAL HpCDD	2	119.17	0.12	E
TOTAL TCDF	4	2.18	0.04	
TOTAL PeCDF	4	8.19	0.11	
TOTAL HxCDF	5	46.79	0.57	
TOTAL HpCDF	2	163.54	0.20	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-10**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-10**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.06 g  
 Matrix: Soil  
 Origin: Site G

File: F11429  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.61	72.7	0.88	22:38	-
13C12-2,3,7,8-TCDD	6.85	137.8	0.71	23:16	Y
13C12-1,2,3,6,7,8-HxCDD	3.89	78.4	1.33	32:58	-
13C12-1,2,3,4,6,7,8-HpCDF	3.67	36.9	1.12	36:06	Y
13C12-OCDD	0.97	9.7	0.83	41:56	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.50	100.4	23:17	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.82	22:57	-
13C12-1,2,3,7,8,9-HxCDD	1.30	33:23	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.



**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-1**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-11**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/15/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11453  
 Ret check: F11449  
 Daily cal: F11450  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	-	00:00	U
1,2,3,7,8-PeCDD	ND	0.08	-	00:00	U
1,2,3,4,7,8-HxCDD	7.92	0.24	1.33	32:11	
1,2,3,6,7,8-HxCDD	45.03	0.25	1.29	32:19	
1,2,3,7,8,9-HxCDD	8.21	0.25	1.41	32:48	
1,2,3,4,6,7,8-HpCDD	942.33	0.33	1.06	37:04	E
OCDD	27324.77	2.25	0.93	41:50	E
2,3,7,8-TCDF	1.15	0.04	0.70	22:17	
1,2,3,7,8-PeCDF	ND	0.02	-	00:00	U
2,3,4,7,8-PeCDF	0.92	0.02	1.50	27:19	J
1,2,3,4,7,8-HxCDF	26.81	0.35	1.31	31:09	
1,2,3,6,7,8-HxCDF	9.45	0.34	1.15	31:18	
2,3,4,6,7,8-HxCDF	6.55	0.39	1.37	32:03	
1,2,3,7,8,9-HxCDF	2.91	0.44	1.28	33:15	
1,2,3,4,6,7,8-HpCDF	591.44	0.66	1.08	35:36	E
1,2,3,4,7,8,9-HpCDF	34.70	0.79	1.09	37:41	
OCDF	13672.30	1.44	0.95	41:59	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.20	0.03	J
TOTAL PeCDD	0	ND	0.08	U
TOTAL HxCDD	3	61.16	0.25	E
TOTAL HpCDD	2	2774.81	0.33	E
TOTAL TCDF	4	5.54	0.04	
TOTAL PeCDF	9	29.95	0.02	E
TOTAL HxCDF	9	868.10	0.44	E
TOTAL HpCDF	4	3581.60	0.79	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-1**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-11**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/15/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11453  
 Ret check: F11449  
 Daily cal: F11450  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.62	73.0	0.82	22:16	-
13C12-2,3,7,8-TCDD	11.55	232.6	0.65	22:53	Y
13C12-1,2,3,6,7,8-HxCDD	4.03	81.1	1.20	32:18	-
13C12-1,2,3,4,6,7,8-HpCDF	4.60	46.3	1.00	35:35	-
13C12-OCDD	0.61	6.1	1.62	41:48	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.09	84.3	22:55	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	22:42	-
13C12-1,2,3,7,8,9-HxCDD	1.40	32:47	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-2**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-12**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.1 g  
 Matrix: Soil  
 Origin: Site G

File: F11430  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.06	-	00:00	U
1,2,3,7,8-PeCDD	0.74	0.11	1.37	27:42	J
1,2,3,4,7,8-HxCDD	4.78	0.35	1.20	32:08	
1,2,3,6,7,8-HxCDD	20.72	0.36	1.33	32:14	
1,2,3,7,8,9-HxCDD	8.16	0.36	1.30	32:42	
1,2,3,4,6,7,8-HpCDD	491.45	0.24	1.06	37:01	E
OCDD	10579.19	3.10	0.92	41:50	E
2,3,7,8-TCDF	ND	0.06	-	00:00	U
1,2,3,7,8-PeCDF	ND	0.13	-	00:00	U
2,3,4,7,8-PeCDF	ND	0.14	-	00:00	U
1,2,3,4,7,8-HxCDF	7.11	0.61	1.37	31:04	
1,2,3,6,7,8-HxCDF	6.10	0.59	1.21	31:12	
2,3,4,6,7,8-HxCDF	10.00	0.69	1.34	31:59	
1,2,3,7,8,9-HxCDF	ND	0.76	-	00:00	U
1,2,3,4,6,7,8-HpCDF	306.10	0.86	1.08	35:32	E
1,2,3,4,7,8,9-HpCDF	ND	1.02	-	00:00	U
OCDF	5556.74	3.05	0.92	42:00	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.06	U
TOTAL PeCDD	2	1.34	0.11	
TOTAL HxCDD	6	131.25	0.36	E
TOTAL HpCDD	2	1409.05	0.24	E
TOTAL TCDF	1	3.93	0.06	
TOTAL PeCDF	3	30.86	0.14	E
TOTAL HxCDF	7	385.79	0.76	E
TOTAL HpCDF	4	1476.39	1.02	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-2**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-12**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.1 g  
 Matrix: Soil  
 Origin: Site G

File: F11430  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.74	75.6	0.84	22:14	-
13C12-2,3,7,8-TCDD	6.20	125.2	0.74	22:51	Y
13C12-1,2,3,6,7,8-HxCDD	3.85	77.8	1.34	32:14	-
13C12-1,2,3,4,6,7,8-HpCDF	5.26	53.1	1.16	35:31	-
13C12-OCDD	0.59	5.9	1.00	41:48	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.27	91.6	22:56	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.86	22:39	-
13C12-1,2,3,7,8,9-HxCDD	1.35	32:41	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-3**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-13**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.1 g  
 Matrix: Soil  
 Origin: Site G

File: F11422  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-		U
1,2,3,7,8-PeCDD	ND	0.04	-		U
1,2,3,4,7,8-HxCDD	2.09	0.12	1.25	32:12	J
1,2,3,6,7,8-HxCDD	9.85	0.13	1.30	32:18	
1,2,3,7,8,9-HxCDD	2.98	0.12	1.40	32:47	
1,2,3,4,6,7,8-HpCDD	204.65	0.12	1.07	37:02	E
OCDD	5883.84	1.26	0.93	41:48	E
2,3,7,8-TCDF	0.53	0.01	0.85	22:16	J
1,2,3,7,8-PeCDF	ND	0.02	-		U
2,3,4,7,8-PeCDF	ND	0.02	-		U
1,2,3,4,7,8-HxCDF	9.92	0.16	1.33	31:08	
1,2,3,6,7,8-HxCDF	5.42	0.15	1.10	31:17	
2,3,4,6,7,8-HxCDF	2.93	0.18	1.27	32:03	
1,2,3,7,8,9-HxCDF	ND	0.20	-		U
1,2,3,4,6,7,8-HpCDF	137.12	0.62	1.06	35:34	E
1,2,3,4,7,8,9-HpCDF	9.46	0.73	1.11	37:40	
OCDF	1580.23	1.67	0.92	41:55	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.01	U
TOTAL PeCDD	0	ND	0.04	U
TOTAL HxCDD	6	74.48	0.13	E
TOTAL HpCDD	2	632.49	0.12	E
TOTAL TCDF	3	2.44	0.01	
TOTAL PeCDF	8	13.28	0.02	
TOTAL HxCDF	8	251.85	0.20	E
TOTAL HpCDF	4	750.59	0.73	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-3**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-13**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.1 g  
 Matrix: Soil  
 Origin: Site G

File: F11422  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.92	79.1	0.87	22:15	-
13C12-2,3,7,8-TCDD	7.41	149.8	0.70	22:52	Y
13C12-1,2,3,6,7,8-HxCDD	4.36	88.1	1.29	32:18	-
13C12-1,2,3,4,6,7,8-HpCDF	4.75	48.0	1.20	35:33	-
13C12-OCDD	1.00	10.1	1.02	41:47	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.24	90.5	22:53	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.84	22:40	-
13C12-1,2,3,7,8,9-HxCDD	1.37	32:46	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-4**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-14**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11423  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-	00:00	U
1,2,3,7,8-PeCDD	ND	0.03	-	00:00	U
1,2,3,4,7,8-HxCDD	1.24	0.29	1.20	32:14	J
1,2,3,6,7,8-HxCDD	4.07	0.30	1.31	32:20	
1,2,3,7,8,9-HxCDD	1.97	0.29	1.07	32:49	J
1,2,3,4,6,7,8-HpCDD	69.25	0.11	1.03	37:01	E
OCDD	1641.75	1.23	0.93	41:41	E
2,3,7,8-TCDF	0.19	0.01	0.88	22:21	J
1,2,3,7,8-PeCDF	ND	0.01	-	00:00	U
2,3,4,7,8-PeCDF	ND	0.01	-	00:00	U
1,2,3,4,7,8-HxCDF	2.62	0.68	1.22	31:10	
1,2,3,6,7,8-HxCDF	3.82	0.66	1.27	31:19	
2,3,4,6,7,8-HxCDF	ND	0.76	-	00:00	U
1,2,3,7,8,9-HxCDF	2.26	0.85	1.27	32:04	J
1,2,3,4,6,7,8-HpCDF	65.52	0.50	1.08	35:35	E
1,2,3,4,7,8,9-HpCDF	1.74	0.59	1.12	37:40	J
OCDF	252.71	0.91	0.91	41:51	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	4	0.29	0.01	J
TOTAL PeCDD	5	1.04	0.03	
TOTAL HxCDD	5	37.81	0.30	
TOTAL HpCDD	2	220.07	0.11	E
TOTAL TCDF	5	1.56	0.01	
TOTAL PeCDF	4	6.74	0.01	
TOTAL HxCDF	6	140.69	0.85	E
TOTAL HpCDF	3	269.75	0.59	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-4**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-14**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11423  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.56	71.4	0.85	22:20	-
13C12-2,3,7,8-TCDD	4.58	91.9	0.78	22:58	-
13C12-1,2,3,6,7,8-HxCDD	3.81	76.4	1.31	32:19	-
13C12-1,2,3,4,6,7,8-HpCDF	3.88	38.9	1.17	35:34	Y
13C12-OCDD	1.37	13.8	0.97	41:39	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.98	79.5	22:58	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:45	-
13C12-1,2,3,7,8,9-HxCDD	1.33	32:48	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.



**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WP-1**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-15**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11431  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	1.74	0.02	0.68	23:06	
1,2,3,7,8-PeCDD	ND	0.03	-		U
1,2,3,4,7,8-HxCDD	70.10	0.28	1.27	32:31	E
1,2,3,6,7,8-HxCDD	237.87	0.30	1.30	32:38	E
1,2,3,7,8,9-HxCDD	122.76	0.29	1.27	33:06	E
1,2,3,4,6,7,8-HpCDD	2529.79	0.16	1.07	37:26	E
OCDD	19652.20	2.91	0.93	42:05	E
2,3,7,8-TCDF	2.49	0.07	0.81	22:27	
1,2,3,7,8-PeCDF	ND	0.04	-		U
2,3,4,7,8-PeCDF	ND	0.04	-		U
1,2,3,4,7,8-HxCDF	84.52	1.04	1.27	31:30	E
1,2,3,6,7,8-HxCDF	31.10	1.01	1.19	31:38	
2,3,4,6,7,8-HxCDF	32.87	1.18	1.38	32:23	
1,2,3,7,8,9-HxCDF	12.48	1.30	1.14	33:32	
1,2,3,4,6,7,8-HpCDF	1832.21	0.38	1.09	35:55	E
1,2,3,4,7,8,9-HpCDF	115.26	0.45	1.10	37:57	E
OCDF	18103.05	2.85	0.93	42:14	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	7	14.31	0.02	
TOTAL PeCDD	11	59.89	0.03	E
TOTAL HxCDD	7	1992.56	0.30	E
TOTAL HpCDD	2	7222.58	0.16	E
TOTAL TCDF	8	23.73	0.07	E
TOTAL PeCDF	9	130.28	0.04	E
TOTAL HxCDF	9	3834.16	0.00	E
TOTAL HpCDF	3	4642.35	0.45	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WP-1**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-15**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11431  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.86	57.3	0.88	22:27	-
13C12-2,3,7,8-TCDD	6.78	136.0	0.69	23:04	Y
13C12-1,2,3,6,7,8-HxCDD	3.15	63.2	1.30	32:38	-
13C12-1,2,3,4,6,7,8-HpCDF	3.30	33.1	Obscured	35:54	Y
13C12-OCDD	0.53	5.3	2.28	42:04	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.61	64.7	23:05	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.81	22:51	-
13C12-1,2,3,7,8,9-HxCDD	1.37	33:05	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: DA-1**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-16**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11427  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-		U
1,2,3,7,8-PeCDD	ND	0.06	-		U
1,2,3,4,7,8-HxCDD	ND	0.09	-		U
1,2,3,6,7,8-HxCDD	ND	0.09	-		U
1,2,3,7,8,9-HxCDD	ND	0.09	-		U
1,2,3,4,6,7,8-HpCDD	3.08	0.04	1.19	36:56	
OCDD	36.55	0.07	0.91	41:41	
2,3,7,8-TCDF	0.05	0.02	0.76	22:10	J
1,2,3,7,8-PeCDF	ND	0.02	-		U
2,3,4,7,8-PeCDF	ND	0.02	-		U
1,2,3,4,7,8-HxCDF	0.06	0.05	1.06	30:58	J
1,2,3,6,7,8-HxCDF	ND	0.05	-		U
2,3,4,6,7,8-HxCDF	ND	0.05	-		U
1,2,3,7,8,9-HxCDF	ND	0.06	-		U
1,2,3,4,6,7,8-HpCDF	0.87	0.08	1.13	35:27	J
1,2,3,4,7,8,9-HpCDF	ND	0.10	-		U
OCDF	4.03	0.06	1.00	41:53	J

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	2	0.12	0.01	J
TOTAL PeCDD	0	ND	0.06	U
TOTAL HxCDD	1	0.11	0.09	J
TOTAL HpCDD	2	5.47	0.04	
TOTAL TCDF	2	0.07	0.02	J
TOTAL PeCDF	2	0.14	0.02	J
TOTAL HxCDF	3	0.58	0.06	J
TOTAL HpCDF	2	3.39	0.10	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: DA-1**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-16**

Date collected: 3/23/95  
Date received: 3/27/95  
Date extracted: 3/30/95  
Date analyzed: 4/13/95

Sample size: 10.02 g  
Matrix: Soil  
Origin: Site G

File: F11427  
Ret check: F11425  
Daily cal: F11426  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.79	76.0	0.86	22:09	-
13C12-2,3,7,8-TCDD	4.11	82.4	0.81	22:47	-
13C12-1,2,3,6,7,8-HxCDD	3.76	75.3	1.39	32:10	-
13C12-1,2,3,4,6,7,8-HpCDF	6.15	61.7	1.14	35:27	-
13C12-OCDD	4.54	45.5	0.96	41:40	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.14	85.9	22:48	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:35	-
13C12-1,2,3,7,8,9-HxCDD	1.36	32:37	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**IONICS INTERNATIONAL, INC.**  
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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: DA-3**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-17**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11428  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.02	-		U
1,2,3,7,8-PeCDD	ND	0.02	-		U
1,2,3,4,7,8-HxCDD	ND	0.08	-		U
1,2,3,6,7,8-HxCDD	ND	0.08	-		U
1,2,3,7,8,9-HxCDD	ND	0.08	-		U
1,2,3,4,6,7,8-HpCDD	2.86	0.03	0.98	37:05	
OCDD	30.45	0.10	0.91	41:48	
2,3,7,8-TCDF	0.04	0.01	0.85	22:12	J
1,2,3,7,8-PeCDF	ND	0.02	-		U
2,3,4,7,8-PeCDF	ND	0.02	-		U
1,2,3,4,7,8-HxCDF	0.10	0.02	1.36	31:04	J
1,2,3,6,7,8-HxCDF	ND	0.02	-		U
2,3,4,6,7,8-HxCDF	ND	0.02	-		U
1,2,3,7,8,9-HxCDF	ND	0.03	-		U
1,2,3,4,6,7,8-HpCDF	1.11	0.08	1.26	35:36	J
1,2,3,4,7,8,9-HpCDF	ND	0.10	-		U
OCDF	3.87	0.11	0.91	42:01	J

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.12	0.02	J
TOTAL PeCDD	0	ND	0.02	U
TOTAL HxCDD	1	0.38	0.08	J
TOTAL HpCDD	2	5.63	0.03	
TOTAL TCDF	3	0.15	0.01	J
TOTAL PeCDF	0	ND	0.02	U
TOTAL HxCDF	2	0.37	0.03	J
TOTAL HpCDF	2	3.38	0.10	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: DA-3**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-17**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11428  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.45	69.3	0.84	22:11	-
13C12-2,3,7,8-TCDD	3.78	75.8	0.82	22:49	-
13C12-1,2,3,6,7,8-HxCDD	3.44	69.0	1.42	32:17	-
13C12-1,2,3,4,6,7,8-HpCDF	6.00	60.2	1.13	35:35	-
13C12-OCDD	3.62	36.3	0.98	41:48	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.11	84.7	22:50	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.84	22:37	-
13C12-1,2,3,7,8,9-HxCDD	1.42	32:44	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

# TOXICITY EQUIVALENCE REPORT

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-1**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-1**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/14/95

Sample size: 10.04 g  
 Matrix: Soil  
 Origin: Site G

File: F11447  
 Ret check: F11438  
 Daily cal: F11439  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	7.16	x	0.100	=	0.716
1,2,3,6,7,8-HxCDD	35.89	x	0.100	=	3.589
1,2,3,7,8,9-HxCDD	9.55	x	0.100	=	0.955
1,2,3,4,6,7,8-HpCDD	864.86	x	0.010	=	8.649
OCDD	26183.49	x	0.001	=	26.183
2,3,7,8-TCDF	1.93	x	0.100	=	0.193
1,2,3,7,8-PeCDF	2.65	x	0.050	=	0.133
2,3,4,7,8-PeCDF	3.83	x	0.500	=	1.916
1,2,3,4,7,8-HxCDF	68.72	x	0.100	=	6.872
1,2,3,6,7,8-HxCDF	26.09	x	0.100	=	2.609
2,3,4,6,7,8-HxCDF	18.74	x	0.100	=	1.874
1,2,3,7,8,9-HxCDF	12.93	x	0.100	=	1.293
1,2,3,4,6,7,8-HpCDF	509.26	x	0.010	=	5.093
1,2,3,4,7,8,9-HpCDF	53.49	x	0.010	=	0.535
OCDF	13559.65	x	0.001	=	13.560

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 74.17 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.



**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-2**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-2**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/14/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11448  
 Ret check: F11438  
 Daily cal: F11439  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	1.77	x	0.100	=	0.177
1,2,3,6,7,8-HxCDD	8.99	x	0.100	=	0.899
1,2,3,7,8,9-HxCDD	3.45	x	0.100	=	0.345
1,2,3,4,6,7,8-HpCDD	217.04	x	0.010	=	2.170
OCDD	5630.09	x	0.001	=	5.630
2,3,7,8-TCDF	1.65	x	0.100	=	0.165
1,2,3,7,8-PeCDF	2.49	x	0.050	=	0.125
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	26.98	x	0.100	=	2.698
1,2,3,6,7,8-HxCDF	4.36	x	0.100	=	0.436
2,3,4,6,7,8-HxCDF	2.58	x	0.100	=	0.258
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	120.60	x	0.010	=	1.206
1,2,3,4,7,8,9-HpCDF	10.21	x	0.010	=	0.102
OCDF	935.43	x	0.001	=	0.935

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 15.146 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**IONICS INTERNATIONAL, INC.**  
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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-3**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-3**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/15/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11451  
 Ret check: F11449  
 Daily cal: F11450  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.95	x	0.100	=	0.095
1,2,3,6,7,8-HxCDD	3.85	x	0.100	=	0.385
1,2,3,7,8,9-HxCDD	2.31	x	0.100	=	0.231
1,2,3,4,6,7,8-HpCDD	87.76	x	0.010	=	0.878
OCDD	2293.87	x	0.001	=	2.294
2,3,7,8-TCDF	0.30	x	0.100	=	0.030
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	2.65	x	0.100	=	0.265
1,2,3,6,7,8-HxCDF	1.48	x	0.100	=	0.148
2,3,4,6,7,8-HxCDF	1.25	x	0.100	=	0.125
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	52.36	x	0.010	=	0.524
1,2,3,4,7,8,9-HpCDF	1.98	x	0.010	=	0.020
OCDF	319.89	x	0.001	=	0.320

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 5.315 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-4**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-4**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/15/95

Sample size: 10.04 g  
 Matrix: Soil  
 Origin: Site G

File: F11452  
 Ret check: F11449  
 Daily cal: F11450  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.63	x	0.100	=	0.063
1,2,3,6,7,8-HxCDD	2.41	x	0.100	=	0.241
1,2,3,7,8,9-HxCDD	1.74	x	0.100	=	0.174
1,2,3,4,6,7,8-HpCDD	59.84	x	0.010	=	0.598
OCDD	1465.50	x	0.001	=	1.465
2,3,7,8-TCDF	0.23	x	0.100	=	0.023
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	2.02	x	0.100	=	0.202
1,2,3,6,7,8-HxCDF	1.31	x	0.100	=	0.131
2,3,4,6,7,8-HxCDF	1.00	x	0.100	=	0.100
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	36.08	x	0.010	=	0.361
1,2,3,4,7,8,9-HpCDF	1.57	x	0.010	=	0.016
OCDF	206.24	x	0.001	=	0.206

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 3.58 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-5**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-5**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11414  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.71	x	0.100	=	0.071
1,2,3,6,7,8-HxCDD	2.89	x	0.100	=	0.289
1,2,3,7,8,9-HxCDD	2.03	x	0.100	=	0.203
1,2,3,4,6,7,8-HpCDD	88.08	x	0.010	=	0.881
OCDD	1436.28	x	0.001	=	1.436
2,3,7,8-TCDF	0.18	x	0.100	=	0.018
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	0.25	x	0.500	=	0.125
1,2,3,4,7,8-HxCDF	1.69	x	0.100	=	0.169
1,2,3,6,7,8-HxCDF	0.80	x	0.100	=	0.080
2,3,4,6,7,8-HxCDF	0.63	x	0.100	=	0.063
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	35.24	x	0.010	=	0.352
1,2,3,4,7,8,9-HpCDF	1.92	x	0.010	=	0.019
OCDF	211.02	x	0.001	=	0.211

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 3.917 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-6**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-6**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.01 g  
 Matrix: Soil  
 Origin: Site G

File: F11415  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.36	x	0.100	=	0.036
1,2,3,6,7,8-HxCDD	2.18	x	0.100	=	0.218
1,2,3,7,8,9-HxCDD	1.12	x	0.100	=	0.112
1,2,3,4,6,7,8-HpCDD	61.42	x	0.010	=	0.614
OCDD	1131.63	x	0.001	=	1.132
2,3,7,8-TCDF	0.15	x	0.100	=	0.015
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	1.09	x	0.100	=	0.109
1,2,3,6,7,8-HxCDF	0.74	x	0.100	=	0.074
2,3,4,6,7,8-HxCDF	0.43	x	0.100	=	0.043
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	24.87	x	0.010	=	0.249
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	167.07	x	0.001	=	0.167

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 2.769 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-7**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-7**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11416  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.49	x	0.100	=	0.049
1,2,3,6,7,8-HxCDD	1.93	x	0.100	=	0.193
1,2,3,7,8,9-HxCDD	1.10	x	0.100	=	0.110
1,2,3,4,6,7,8-HpCDD	48.63	x	0.010	=	0.486
OCDD	915.27	x	0.001	=	0.915
2,3,7,8-TCDF	0.21	x	0.100	=	0.021
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	1.20	x	0.100	=	0.120
1,2,3,6,7,8-HxCDF	0.75	x	0.100	=	0.075
2,3,4,6,7,8-HxCDF	0.51	x	0.100	=	0.051
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	23.28	x	0.010	=	0.233
1,2,3,4,7,8,9-HpCDF	1.22	x	0.010	=	0.012
OCDF	119.34	x	0.001	=	0.119

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 2.384 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-8**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-8**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11417  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.43	x	0.100	=	0.043
1,2,3,6,7,8-HxCDD	2.34	x	0.100	=	0.234
1,2,3,7,8,9-HxCDD	0.89	x	0.100	=	0.089
1,2,3,4,6,7,8-HpCDD	63.45	x	0.010	=	0.635
OCDD	1272.54	x	0.001	=	1.273
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	1.30	x	0.100	=	0.130
1,2,3,6,7,8-HxCDF	0.87	x	0.100	=	0.087
2,3,4,6,7,8-HxCDF	0.49	x	0.100	=	0.049
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	27.66	x	0.010	=	0.277
1,2,3,4,7,8,9-HpCDF	1.43	x	0.010	=	0.014
OCDF	182.47	x	0.001	=	0.182

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 3.013 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-9**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-9**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.04 g  
 Matrix: Soil  
 Origin: Site G

File: F11418  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.49	x	0.100	=	0.049
1,2,3,6,7,8-HxCDD	1.93	x	0.100	=	0.193
1,2,3,7,8,9-HxCDD	1.35	x	0.100	=	0.135
1,2,3,4,6,7,8-HpCDD	42.17	x	0.010	=	0.422
OCDD	984.88	x	0.001	=	0.985
2,3,7,8-TCDF	0.26	x	0.100	=	0.026
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	1.68	x	0.100	=	0.168
1,2,3,6,7,8-HxCDF	1.01	x	0.100	=	0.101
2,3,4,6,7,8-HxCDF	0.59	x	0.100	=	0.059
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	21.77	x	0.010	=	0.218
1,2,3,4,7,8,9-HpCDF	0.96	x	0.010	=	0.010
OCDF	118.49	x	0.001	=	0.118

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 2.484 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: QA-10**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-10**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.06 g  
 Matrix: Soil  
 Origin: Site G

File: F11429  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	1.03	x	0.100	=	0.103
1,2,3,6,7,8-HxCDD	4.05	x	0.100	=	0.405
1,2,3,7,8,9-HxCDD	2.18	x	0.100	=	0.218
1,2,3,4,6,7,8-HpCDD	58.54	x	0.010	=	0.585
OCDD	1654.21	x	0.001	=	1.654
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	4.87	x	0.100	=	0.487
1,2,3,6,7,8-HxCDF	1.70	x	0.100	=	0.170
2,3,4,6,7,8-HxCDF	1.57	x	0.100	=	0.157
1,2,3,7,8,9-HxCDF	0.99	x	0.100	=	0.099
1,2,3,4,6,7,8-HpCDF	40.48	x	0.010	=	0.405
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	243.23	x	0.001	=	0.243

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 4.526 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-1**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-11**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/15/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11453  
 Ret check: F11449  
 Daily cal: F11450  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	7.92	x	0.100	=	0.792
1,2,3,6,7,8-HxCDD	45.03	x	0.100	=	4.503
1,2,3,7,8,9-HxCDD	8.21	x	0.100	=	0.821
1,2,3,4,6,7,8-HpCDD	942.33	x	0.010	=	9.423
OCDD	27324.77	x	0.001	=	27.325
2,3,7,8-TCDF	1.15	x	0.100	=	0.115
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	0.92	x	0.500	=	0.461
1,2,3,4,7,8-HxCDF	26.81	x	0.100	=	2.681
1,2,3,6,7,8-HxCDF	9.45	x	0.100	=	0.945
2,3,4,6,7,8-HxCDF	6.55	x	0.100	=	0.655
1,2,3,7,8,9-HxCDF	2.91	x	0.100	=	0.291
1,2,3,4,6,7,8-HpCDF	591.44	x	0.010	=	5.914
1,2,3,4,7,8,9-HpCDF	34.70	x	0.010	=	0.347
OCDF	13672.30	x	0.001	=	13.672

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 67.945 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**IONICS INTERNATIONAL, INC.**  
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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-2**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-12**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.1 g  
 Matrix: Soil  
 Origin: Site G

File: F11430  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	0.74	x	0.500	=	0.368
1,2,3,4,7,8-HxCDD	4.78	x	0.100	=	0.478
1,2,3,6,7,8-HxCDD	20.72	x	0.100	=	2.072
1,2,3,7,8,9-HxCDD	8.16	x	0.100	=	0.816
1,2,3,4,6,7,8-HpCDD	491.45	x	0.010	=	4.915
OCDD	10579.19	x	0.001	=	10.579
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	7.11	x	0.100	=	0.711
1,2,3,6,7,8-HxCDF	6.10	x	0.100	=	0.610
2,3,4,6,7,8-HxCDF	10.00	x	0.100	=	1.000
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	306.10	x	0.010	=	3.061
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	5556.74	x	0.001	=	5.557

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 30.167 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-3**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-13**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.1 g  
 Matrix: Soil  
 Origin: Site G

File: F11422  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	2.09	x	0.100	=	0.209
1,2,3,6,7,8-HxCDD	9.85	x	0.100	=	0.985
1,2,3,7,8,9-HxCDD	2.98	x	0.100	=	0.298
1,2,3,4,6,7,8-HpCDD	204.65	x	0.010	=	2.046
OCDD	5883.84	x	0.001	=	5.884
2,3,7,8-TCDF	0.53	x	0.100	=	0.053
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	9.92	x	0.100	=	0.992
1,2,3,6,7,8-HxCDF	5.42	x	0.100	=	0.542
2,3,4,6,7,8-HxCDF	2.93	x	0.100	=	0.293
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	137.12	x	0.010	=	1.371
1,2,3,4,7,8,9-HpCDF	9.46	x	0.010	=	0.095
OCDF	1580.23	x	0.001	=	1.580

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 14.348 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WA-4**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-14**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11423  
 Ret check: F11412  
 Daily cal: F11413  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	1.24	x	0.100	=	0.124
1,2,3,6,7,8-HxCDD	4.07	x	0.100	=	0.407
1,2,3,7,8,9-HxCDD	1.97	x	0.100	=	0.197
1,2,3,4,6,7,8-HpCDD	69.25	x	0.010	=	0.693
OCDD	1641.75	x	0.001	=	1.642
2,3,7,8-TCDF	0.19	x	0.100	=	0.019
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	2.62	x	0.100	=	0.262
1,2,3,6,7,8-HxCDF	3.82	x	0.100	=	0.382
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	2.26	x	0.100	=	0.226
1,2,3,4,6,7,8-HpCDF	65.52	x	0.010	=	0.655
1,2,3,4,7,8,9-HpCDF	1.74	x	0.010	=	0.017
OCDF	252.71	x	0.001	=	0.253

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 4.877 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: WP-1**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Lab Project: 95-265**  
**Lab Sample: 3-65-15**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11431  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	1.74	x	1.000	=	1.738
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	70.10	x	0.100	=	7.010
1,2,3,6,7,8-HxCDD	237.87	x	0.100	=	23.787
1,2,3,7,8,9-HxCDD	122.76	x	0.100	=	12.276
1,2,3,4,6,7,8-HpCDD	2529.79	x	0.010	=	25.298
OCDD	19652.20	x	0.001	=	19.652
2,3,7,8-TCDF	2.49	x	0.100	=	0.249
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	84.52	x	0.100	=	8.452
1,2,3,6,7,8-HxCDF	31.10	x	0.100	=	3.110
2,3,4,6,7,8-HxCDF	32.87	x	0.100	=	3.287
1,2,3,7,8,9-HxCDF	12.48	x	0.100	=	1.248
1,2,3,4,6,7,8-HpCDF	1832.21	x	0.010	=	18.322
1,2,3,4,7,8,9-HpCDF	115.26	x	0.010	=	1.153
OCDF	18103.05	x	0.001	=	18.103

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 143.685 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: DA-1**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-16**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11427  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	3.08	x	0.010	=	0.031
OCDD	36.55	x	0.001	=	0.037
2,3,7,8-TCDF	0.05	x	0.100	=	0.005
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	0.06	x	0.100	=	0.006
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	0.87	x	0.010	=	0.009
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	4.03	x	0.001	=	0.004

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.092 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: DA-3**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-265**  
**Ionics Sample: 3-65-17**

Date collected: 3/23/95  
 Date received: 3/27/95  
 Date extracted: 3/30/95  
 Date analyzed: 4/13/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11428  
 Ret check: F11425  
 Daily cal: F11426  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	2.86	x	0.010	=	0.029
OCDD	30.45	x	0.001	=	0.030
2,3,7,8-TCDF	0.04	x	0.100	=	0.004
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	0.10	x	0.100	=	0.010
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	1.11	x	0.010	=	0.011
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	3.87	x	0.001	=	0.004

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.088 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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Sauger  
Area 1

1995 Site 6  
Dioxin data  
(QA/QC is in file room)

(COPY)  
**SUMMARY REPORT**

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-1**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-1**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.05	ND	2.46	98%	50-150
1,2,3,7,8-PeCDD	ND	0.22	ND	6.62	106%	50-150
1,2,3,4,7,8-HxCDD	0.29	0.09	ND	ND	-	-
1,2,3,6,7,8-HxCDD	0.78	0.11	ND	5.76	92%	50-150
1,2,3,7,8,9-HxCDD	0.71	0.10	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	31.52	0.14	ND	5.51	88%	50-150
OCDD	483.05	1.75	ND	10.26	82%	50-150
2,3,7,8-TCDF	ND	0.03	ND	2.74	109%	50-150
1,2,3,7,8-PeCDF	ND	0.08	ND	7.01	112%	50-150
2,3,4,7,8-PeCDF	ND	0.09	ND	ND	-	-
1,2,3,4,7,8-HxCDF	0.21	0.14	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.13	ND	6.23	100%	50-150
2,3,4,6,7,8-HxCDF	ND	0.14	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.16	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	9.10	0.26	ND	6.04	97%	50-150
1,2,3,4,7,8,9-HpCDF	0.56	0.33	ND	ND	-	-
OCDF	62.57	1.91	ND	10.31	82%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.05	<b>Total dioxins/furans</b>  <b>629.06 ppb</b>
TOTAL PeCDD	0	ND	0.22	
TOTAL HxCDD	5	3.61	0.11	
TOTAL HpCDD	2	38.70	0.14	
TOTAL TCDF	1	0.08	0.03	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>1.157 ppb</b>
TOTAL PeCDF	2	0.88	0.09	
TOTAL HxCDF	4	6.31	0.16	
TOTAL HpCDF	3	33.86	0.33	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-2**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-2**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.08	ND	2.46	98%	50-150
1,2,3,7,8-PeCDD	ND	0.21	ND	6.62	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.11	ND	ND	-	-
1,2,3,6,7,8-HxCDD	0.74	0.14	ND	5.76	92%	50-150
1,2,3,7,8,9-HxCDD	ND	0.13	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	34.01	0.18	ND	5.51	88%	50-150
OCDD	488.59	0.46	ND	10.26	82%	50-150
2,3,7,8-TCDF	ND	0.05	ND	2.74	109%	50-150
1,2,3,7,8-PeCDF	ND	0.07	ND	7.01	112%	50-150
2,3,4,7,8-PeCDF	ND	0.07	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.03	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.03	ND	6.23	100%	50-150
2,3,4,6,7,8-HxCDF	ND	0.03	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.04	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	8.44	0.18	ND	6.04	97%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.22	ND	ND	-	-
OCDF	64.75	0.38	ND	10.31	82%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	<b>Total dioxins/furans</b>  <b>630.28 ppb</b>  <b>2,3,7,8-TCDD toxicity equivalent</b>  <b>1.052 ppb</b>
TOTAL TCDD	2	0.26	0.08	
TOTAL PeCDD	0	ND	0.21	
TOTAL HxCDD	4	4.59	0.14	
TOTAL HpCDD	2	32.26	0.18	
TOTAL TCDF	0	ND	0.05	
TOTAL PeCDF	0	ND	0.07	
TOTAL HxCDF	4	5.09	0.04	
TOTAL HpCDF	2	34.74	0.22	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-3**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-3**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.06	ND	2.46	98%	50-150
1,2,3,7,8-PeCDD	ND	0.23	ND	6.62	106%	50-150
1,2,3,4,7,8-HxCDD	1.04	0.24	ND	ND	-	-
1,2,3,6,7,8-HxCDD	2.47	0.29	ND	5.76	92%	50-150
1,2,3,7,8,9-HxCDD	1.62	0.28	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	86.57	0.26	ND	5.51	88%	50-150
OCDD	1803.45	2.09	ND	10.26	82%	50-150
2,3,7,8-TCDF	0.73	0.08	ND	2.74	109%	50-150
1,2,3,7,8-PeCDF	0.83	0.17	ND	7.01	112%	50-150
2,3,4,7,8-PeCDF	ND	0.17	ND	ND	-	-
1,2,3,4,7,8-HxCDF	5.10	0.16	ND	ND	-	-
1,2,3,6,7,8-HxCDF	1.49	0.15	ND	6.23	100%	50-150
2,3,4,6,7,8-HxCDF	0.43	0.16	ND	ND	-	-
1,2,3,7,8,9-HxCDF	0.98	0.19	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	39.85	0.43	ND	6.04	97%	50-150
1,2,3,4,7,8,9-HpCDF	6.03	0.55	ND	ND	-	-
OCDF	573.57	1.46	ND	10.31	82%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	0.37	0.06	<b>Total dioxins/furans</b>  <b>2600.85 ppb</b>
TOTAL PeCDD	0	ND	0.23	
TOTAL HxCDD	5	9.88	0.29	
TOTAL HpCDD	2	72.28	0.26	
TOTAL TCDF	4	0.64	0.08	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>5.129 ppb</b>
TOTAL PeCDF	2	2.39	0.17	
TOTAL HxCDF	8	29.85	0.19	
TOTAL HpCDF	4	108.42	0.55	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

# **ANALYSIS REPORT**

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-1**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-1**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.4 g  
 Matrix: Soil  
 Origin: Site G

File: F11720  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05	-		U
1,2,3,7,8-PeCDD	ND	0.22	-		U
1,2,3,4,7,8-HxCDD	0.29	0.09	1.32	31:38	J
1,2,3,6,7,8-HxCDD	0.78	0.11	1.24	31:43	J
1,2,3,7,8,9-HxCDD	0.71	0.10	1.43	32:10	J
1,2,3,4,6,7,8-HpCDD	31.52	0.14	0.99	36:31	
OCDD	483.05	1.75	0.87	41:19	E
2,3,7,8-TCDF	ND	0.03	-		U
1,2,3,7,8-PeCDF	ND	0.08	-		U
2,3,4,7,8-PeCDF	ND	0.09	-		U
1,2,3,4,7,8-HxCDF	0.21	0.14	1.37	30:34	J
1,2,3,6,7,8-HxCDF	ND	0.13	-		U
2,3,4,6,7,8-HxCDF	ND	0.14	-		U
1,2,3,7,8,9-HxCDF	ND	0.16	-		U
1,2,3,4,6,7,8-HpCDF	9.10	0.26	1.05	35:02	
1,2,3,4,7,8,9-HpCDF	0.56	0.33	1.12	37:10	J
OCDF	62.57	1.91	0.96	41:27	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.05	U
TOTAL PeCDD	0	ND	0.22	U
TOTAL HxCDD	5	3.61	0.11	
TOTAL HpCDD	2	38.70	0.14	
TOTAL TCDF	1	0.08	0.03	J
TOTAL PeCDF	2	0.88	0.09	J
TOTAL HxCDF	4	6.31	0.16	
TOTAL HpCDF	3	33.86	0.33	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-1**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-1**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.4 g  
 Matrix: Soil  
 Origin: Site G

File: F11720  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.13	65.1	0.79	21:37	-
13C12-2,3,7,8-TCDD	3.53	73.4	0.80	22:16	-
13C12-1,2,3,6,7,8-HxCDD	2.94	61.1	1.18	31:43	-
13C12-1,2,3,4,6,7,8-HpCDF	4.98	51.8	1.15	35:01	-
13C12-OCDD	4.54	47.2	0.94	41:17	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.32	96.6	22:17	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.86	22:03	-
13C12-1,2,3,7,8,9-HxCDD	1.27	32:09	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-2**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-2**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.05 g  
 Matrix: Soil  
 Origin: Site G

File: F11721  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.08	-		U
1,2,3,7,8-PeCDD	ND	0.21	-		U
1,2,3,4,7,8-HxCDD	ND	0.11	-		U
1,2,3,6,7,8-HxCDD	0.74	0.14	1.26	31:47	J
1,2,3,7,8,9-HxCDD	ND	0.13	-		U
1,2,3,4,6,7,8-HpCDD	34.01	0.18	1.01	36:31	
OCDD	488.59	0.46	0.86	41:19	E
2,3,7,8-TCDF	ND	0.05	-		U
1,2,3,7,8-PeCDF	ND	0.07	-		U
2,3,4,7,8-PeCDF	ND	0.07	-		U
1,2,3,4,7,8-HxCDF	ND	0.03	-		U
1,2,3,6,7,8-HxCDF	ND	0.03	-		U
2,3,4,6,7,8-HxCDF	ND	0.03	-		U
1,2,3,7,8,9-HxCDF	ND	0.04	-		U
1,2,3,4,6,7,8-HpCDF	8.44	0.18	1.13	35:05	
1,2,3,4,7,8,9-HpCDF	ND	0.22	-		U
OCDF	64.75	0.38	0.92	41:27	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	2	0.26	0.08	J
TOTAL PeCDD	0	ND	0.21	U
TOTAL HxCDD	4	4.59	0.14	
TOTAL HpCDD	2	32.26	0.18	
TOTAL TCDF	0	ND	0.05	U
TOTAL PeCDF	0	ND	0.07	U
TOTAL HxCDF	4	5.09	0.04	
TOTAL HpCDF	2	34.74	0.22	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**IONICS INTERNATIONAL, INC.**  
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**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-2**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-2**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.05 g  
 Matrix: Soil  
 Origin: Site G

File: F11721  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.18	63.9	0.80	21:42	-
13C12-2,3,7,8-TCDD	3.65	73.3	0.82	22:20	-
13C12-1,2,3,6,7,8-HxCDD	2.77	55.6	1.32	31:45	-
13C12-1,2,3,4,6,7,8-HpCDF	4.85	48.8	1.17	35:04	-
13C12-OCDD	3.49	35.0	0.99	41:17	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.38	95.6	22:21	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.90	22:07	-
13C12-1,2,3,7,8,9-HxCDD	1.21	32:13	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-3**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-3**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.4 g  
 Matrix: Soil  
 Origin: Site G

File: F11722  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.06	-		U
1,2,3,7,8-PeCDD	ND	0.23	-		U
1,2,3,4,7,8-HxCDD	1.04	0.24	1.24	31:35	J
1,2,3,6,7,8-HxCDD	2.47	0.29	1.42	31:42	
1,2,3,7,8,9-HxCDD	1.62	0.28	1.30	32:10	J
1,2,3,4,6,7,8-HpCDD	86.57	0.26	0.97	36:29	E
OCDD	1803.45	2.09	0.86	41:12	E
2,3,7,8-TCDF	0.73	0.08	0.74	21:39	J
1,2,3,7,8-PeCDF	0.83	0.17	1.80	26:38	J
2,3,4,7,8-PeCDF	ND	0.17	-		U
1,2,3,4,7,8-HxCDF	5.10	0.16	1.16	30:31	
1,2,3,6,7,8-HxCDF	1.49	0.15	1.16	30:40	J
2,3,4,6,7,8-HxCDF	0.43	0.16	1.03	31:25	J
1,2,3,7,8,9-HxCDF	0.98	0.19	1.28	32:36	J
1,2,3,4,6,7,8-HpCDF	39.85	0.43	1.06	35:01	
1,2,3,4,7,8,9-HpCDF	6.03	0.55	1.12	37:04	
OCDF	573.57	1.46	0.90	41:20	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.37	0.06	J
TOTAL PeCDD	0	ND	0.23	U
TOTAL HxCDD	5	9.88	0.29	
TOTAL HpCDD	2	72.28	0.26	E
TOTAL TCDF	4	0.64	0.08	J
TOTAL PeCDF	2	2.39	0.17	
TOTAL HxCDF	8	29.85	0.19	
TOTAL HpCDF	4	108.42	0.55	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-3**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-3**

Date collected: 5/11/95  
Date received: 5/12/95  
Date extracted: 5/19/95  
Date analyzed: 6/5/95

Sample size: 10.4 g  
Matrix: Soil  
Origin: Site G

File: F11722  
Ret check: F11715  
Daily cal: F11716  
Initial cal: F052595C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.19	66.3	0.79	21:38	-
13C12-2,3,7,8-TCDD	8.10	168.6	0.69	22:16	Y
13C12-1,2,3,6,7,8-HxCDD	3.04	63.2	1.23	31:42	-
13C12-1,2,3,4,6,7,8-HpCDF	4.63	48.2	1.13	35:00	-
13C12-OCDD	1.27	13.3	0.92	41:11	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.81	116.9	22:17	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.90	22:04	-
13C12-1,2,3,7,8,9-HxCDD	1.36	32:09	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

# **TOXICITY EQUIVALENCE REPORT**

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-1**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-1**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.4 g  
 Matrix: Soil  
 Origin: Site G

File: F11720  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.29	x	0.100	=	0.029
1,2,3,6,7,8-HxCDD	0.78	x	0.100	=	0.078
1,2,3,7,8,9-HxCDD	0.71	x	0.100	=	0.071
1,2,3,4,6,7,8-HpCDD	31.52	x	0.010	=	0.315
OCDD	483.05	x	0.001	=	0.483
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	0.21	x	0.100	=	0.021
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	9.10	x	0.010	=	0.091
1,2,3,4,7,8,9-HpCDF	0.56	x	0.010	=	0.006
OCDF	62.57	x	0.001	=	0.063

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 1.157 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-2**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-2**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.05 g  
 Matrix: Soil  
 Origin: Site G

File: F11721  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	0.74	x	0.100	=	0.074
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	34.01	x	0.010	=	0.340
OCDD	488.59	x	0.001	=	0.489
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	8.44	x	0.010	=	0.084
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	64.75	x	0.001	=	0.065

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 1.052 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-3**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-3**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.4 g  
 Matrix: Soil  
 Origin: Site G

File: F11722  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	1.04	x	0.100	=	0.104
1,2,3,6,7,8-HxCDD	2.47	x	0.100	=	0.247
1,2,3,7,8,9-HxCDD	1.62	x	0.100	=	0.162
1,2,3,4,6,7,8-HpCDD	86.57	x	0.010	=	0.866
OCDD	1803.45	x	0.001	=	1.803
2,3,7,8-TCDF	0.73	x	0.100	=	0.073
1,2,3,7,8-PeCDF	0.83	x	0.050	=	0.041
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	5.10	x	0.100	=	0.510
1,2,3,6,7,8-HxCDF	1.49	x	0.100	=	0.149
2,3,4,6,7,8-HxCDF	0.43	x	0.100	=	0.043
1,2,3,7,8,9-HxCDF	0.98	x	0.100	=	0.098
1,2,3,4,6,7,8-HpCDF	39.85	x	0.010	=	0.399
1,2,3,4,7,8,9-HpCDF	6.03	x	0.010	=	0.060
OCDF	573.57	x	0.001	=	0.574

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 5.129 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

# **TOXICITY EQUIVALENCE REPORT**



**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-1**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-1**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.4 g  
 Matrix: Soil  
 Origin: Site G

File: F11720  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.29	x	0.100	=	0.029
1,2,3,6,7,8-HxCDD	0.78	x	0.100	=	0.078
1,2,3,7,8,9-HxCDD	0.71	x	0.100	=	0.071
1,2,3,4,6,7,8-HpCDD	31.52	x	0.010	=	0.315
OCDD	483.05	x	0.001	=	0.483
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	0.21	x	0.100	=	0.021
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	9.10	x	0.010	=	0.091
1,2,3,4,7,8,9-HpCDF	0.56	x	0.010	=	0.006
OCDF	62.57	x	0.001	=	0.063

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 1.157 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-2**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-2**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.05 g  
 Matrix: Soil  
 Origin: Site G

File: F11721  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	0.74	x	0.100	=	0.074
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	34.01	x	0.010	=	0.340
OCDD	488.59	x	0.001	=	0.489
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	8.44	x	0.010	=	0.084
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	64.75	x	0.001	=	0.065

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 1.052 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**RIEDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OSD-3**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-307**  
**Ionics Sample: 4-7-3**

Date collected: 5/11/95  
 Date received: 5/12/95  
 Date extracted: 5/19/95  
 Date analyzed: 6/5/95

Sample size: 10.4 g  
 Matrix: Soil  
 Origin: Site G

File: F11722  
 Ret check: F11715  
 Daily cal: F11716  
 Initial cal: F052595C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	1.04	x	0.100	=	0.104
1,2,3,6,7,8-HxCDD	2.47	x	0.100	=	0.247
1,2,3,7,8,9-HxCDD	1.62	x	0.100	=	0.162
1,2,3,4,6,7,8-HpCDD	86.57	x	0.010	=	0.866
OCDD	1803.45	x	0.001	=	1.803
2,3,7,8-TCDF	0.73	x	0.100	=	0.073
1,2,3,7,8-PeCDF	0.83	x	0.050	=	0.041
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	5.10	x	0.100	=	0.510
1,2,3,6,7,8-HxCDF	1.49	x	0.100	=	0.149
2,3,4,6,7,8-HxCDF	0.43	x	0.100	=	0.043
1,2,3,7,8,9-HxCDF	0.98	x	0.100	=	0.098
1,2,3,4,6,7,8-HpCDF	39.85	x	0.010	=	0.399
1,2,3,4,7,8,9-HpCDF	6.03	x	0.010	=	0.060
OCDF	573.57	x	0.001	=	0.574

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 5.129 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Saugus Area 1 Site E-  
1995 Dioxin Data  
(QA/QC is in file room)

(COPY)

## **SUMMARY REPORT**

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-1**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-91-11**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.05	ND	2.32	93%	50-150
1,2,3,7,8-PeCDD	ND	0.29	ND	6.01	96%	50-150
1,2,3,4,7,8-HxCDD	ND	0.35	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.37	ND	6.80	109%	50-150
1,2,3,7,8,9-HxCDD	ND	0.36	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	5.33	0.28	ND	3.99	64%	50-150
OCDD	48.31	0.43	ND	11.10	89%	50-150
2,3,7,8-TCDF	ND	0.09	ND	2.56	102%	50-150
1,2,3,7,8-PeCDF	ND	0.10	ND	6.53	105%	50-150
2,3,4,7,8-PeCDF	ND	0.10	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.20	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.20	ND	7.63	122%	50-150
2,3,4,6,7,8-HxCDF	ND	0.23	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.25	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	ND	0.40	ND	11.06	177%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.47	ND	ND	-	-
OCDF	9.09	0.15	ND	11.25	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.05	<b>Total dioxins/furans</b>  <b>88.93 ppb</b>
TOTAL PeCDD	0	ND	0.29	
TOTAL HxCDD	0	ND	0.37	
TOTAL HpCDD	2	10.23	0.28	
TOTAL TCDF	0	ND	0.09	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>0.11 ppb</b>
TOTAL PeCDF	0	ND	0.10	
TOTAL HxCDF	2	14.12	0.25	
TOTAL HpCDF	1	7.18	0.47	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-3**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-5**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.04	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.21	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.30	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.31	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.31	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	2.29	0.19	ND	6.54	105%	50-150
OCDD	28.69	0.32	ND	11.29	90%	50-150
2,3,7,8-TCDF	ND	0.07	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.07	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.07	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.13	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.13	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.15	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.16	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	ND	0.51	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.61	ND	ND	-	-
OCDF	2.74	0.17	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	0.13	0.04	<b>Total dioxins/furans</b>  <b>37.41 ppb</b>
TOTAL PeCDD	0	ND	0.21	
TOTAL HxCDD	0	ND	0.31	
TOTAL HpCDD	2	4.80	0.19	
TOTAL TCDF	0	ND	0.07	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>0.055 ppb</b>
TOTAL PeCDF	0	ND	0.07	
TOTAL HxCDF	0	ND	0.16	
TOTAL HpCDF	1	1.06	0.61	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-5**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-7**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.06	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.31	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.21	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.22	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.22	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	3.94	0.27	ND	6.54	105%	50-150
OCDD	52.79	0.56	ND	11.29	90%	50-150
2,3,7,8-TCDF	ND	0.06	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.09	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.10	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.20	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.19	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.22	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.25	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	1.52	0.30	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.36	ND	ND	-	-
OCDF	5.69	0.15	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.06	<b>Total dioxins/furans</b>  <b>71.12 ppb</b>
TOTAL PeCDD	0	ND	0.31	
TOTAL HxCDD	0	ND	0.22	
TOTAL HpCDD	2	7.75	0.27	
TOTAL TCDF	0	ND	0.06	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>0.113 ppb</b>
TOTAL PeCDF	0	ND	0.10	
TOTAL HxCDF	0	ND	0.25	
TOTAL HpCDF	2	4.89	0.36	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-7**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-2**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.11	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.15	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.26	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.27	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.26	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	9.99	0.12	ND	6.54	105%	50-150
OCDD	133.93	0.27	ND	11.29	90%	50-150
2,3,7,8-TCDF	ND	0.02	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.06	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.07	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.19	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.18	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.22	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.24	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	2.82	0.70	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.83	ND	ND	-	-
OCDF	11.65	0.20	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.11	<b>Total dioxins/furans</b>  <b>177.54 ppb</b>
TOTAL PeCDD	0	ND	0.15	
TOTAL HxCDD	2	1.17	0.27	
TOTAL HpCDD	2	18.28	0.12	
TOTAL TCDF	0	ND	0.02	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>0.274 ppb</b>
TOTAL PeCDF	0	ND	0.07	
TOTAL HxCDF	1	0.96	0.24	
TOTAL HpCDF	2	11.55	0.83	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

Client Project: 8168  
 Client Sample: CSH-9

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

Ionics Project: 95-288  
 Ionics Sample: 3-88-11

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.09	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.24	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.18	ND	ND	-	-
1,2,3,6,7,8-HxCDD	1.02	0.19	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.18	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	13.45	0.23	ND	6.54	105%	50-150
OCDD	163.07	0.30	ND	11.29	90%	50-150
2,3,7,8-TCDF	ND	0.05	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.08	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.09	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.25	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.25	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.29	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.32	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	3.09	0.49	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.58	ND	ND	-	-
OCDF	19.13	0.27	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	Total dioxins/furans  <b>226.49 ppb</b>  2,3,7,8-TCDD toxicity equivalent  <b>0.45 ppb</b>
TOTAL TCDD	0	ND	0.09	
TOTAL PeCDD	0	ND	0.24	
TOTAL HxCDD	2	1.83	0.19	
TOTAL HpCDD	2	25.12	0.23	
TOTAL TCDF	0	ND	0.05	
TOTAL PeCDF	0	ND	0.09	
TOTAL HxCDF	2	1.92	0.32	
TOTAL HpCDF	2	15.42	0.58	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-11**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-4**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.03	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.16	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	0.14	0.07	ND	ND	-	-
1,2,3,6,7,8-HxCDD	0.19	0.07	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	0.20	0.07	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	8.26	0.07	ND	6.54	105%	50-150
OCDD	100.30	0.11	ND	11.29	90%	50-150
2,3,7,8-TCDF	0.04	0.04	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.08	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.09	ND	ND	-	-
1,2,3,4,7,8-HxCDF	0.15	0.04	ND	ND	-	-
1,2,3,6,7,8-HxCDF	0.09	0.04	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.05	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.05	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	2.04	0.18	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.21	ND	ND	-	-
OCDF	13.85	0.09	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	2	0.18	0.03	<b>Total dioxins/furans</b>  <b>145.53 ppb</b>
TOTAL PeCDD	0	ND	0.16	
TOTAL HxCDD	5	1.56	0.07	
TOTAL HpCDD	2	17.04	0.07	
TOTAL TCDF	1	0.04	0.04	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>0.298 ppb</b>
TOTAL PeCDF	1	0.14	0.09	
TOTAL HxCDF	4	1.79	0.05	
TOTAL HpCDF	2	10.63	0.21	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-13**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-9**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.03	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.39	ND	ND	-	-
1,2,3,6,7,8-HxCDD	28.46	0.41	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	11.01	0.40	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	874.83	0.34	ND	6.54	105%	50-150
OCDD	10100.93	1.50	ND	11.29	90%	50-150
2,3,7,8-TCDF	14.76	0.93	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.12	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	7.90	0.13	ND	ND	-	-
1,2,3,4,7,8-HxCDF	35.87	0.64	ND	ND	-	-
1,2,3,6,7,8-HxCDF	8.44	0.62	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	10.23	0.72	ND	ND	-	-
1,2,3,7,8,9-HxCDF	4.54	0.80	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	610.83	1.48	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	1.76	ND	ND	-	-
OCDF	3885.98	1.25	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	0.29	0.01	<b>Total dioxins/furans</b>  <b>19362.89 ppb</b>
TOTAL PeCDD	0	ND	0.03	
TOTAL HxCDD	4	131.39	0.41	
TOTAL HpCDD	2	1677.27	0.34	
TOTAL TCDF	3	31.27	0.93	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>44.126 ppb</b>
TOTAL PeCDF	7	97.87	0.13	
TOTAL HxCDF	10	772.81	0.80	
TOTAL HpCDF	2	2665.08	1.76	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-15**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-8**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.16	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.66	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.81	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.84	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.82	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	13.04	0.53	ND	6.54	105%	50-150
OCDD	179.19	0.67	ND	11.29	90%	50-150
2,3,7,8-TCDF	2.27	1.93	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.20	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.22	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.56	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.54	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.63	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.70	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	6.10	1.24	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	1.48	ND	ND	-	-
OCDF	29.65	0.38	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	1.81	0.16	<b>Total dioxins/furans</b>  <b>282.07 ppb</b>
TOTAL PeCDD	1	2.21	0.66	
TOTAL HxCDD	1	2.15	0.84	
TOTAL HpCDD	2	27.58	0.53	
TOTAL TCDF	9	8.52	1.93	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>0.627 ppb</b>
TOTAL PeCDF	0	1.76	0.22	
TOTAL HxCDF	2	4.84	0.70	
TOTAL HpCDF	2	24.35	1.48	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-17**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-10**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.05	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.12	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.12	ND	ND	-	-
1,2,3,6,7,8-HxCDD	0.89	0.13	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.12	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	29.43	0.16	ND	6.54	105%	50-150
OCDD	401.35	0.52	ND	11.29	90%	50-150
2,3,7,8-TCDF	0.49	0.21	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.05	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.05	ND	ND	-	-
1,2,3,4,7,8-HxCDF	1.98	0.18	ND	ND	-	-
1,2,3,6,7,8-HxCDF	1.29	0.17	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.20	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.22	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	14.96	0.49	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	1.18	0.58	ND	ND	-	-
OCDF	85.10	0.77	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	<b>Total dioxins/furans</b>  <b>556.94 ppb</b>  <b>2,3,7,8-TCDD toxicity equivalent</b>  <b>1.407 ppb</b>
TOTAL TCDD	1	1.85	0.05	
TOTAL PeCDD	0	ND	0.12	
TOTAL HxCDD	3	4.87	0.13	
TOTAL HpCDD	2	30.02	0.16	
TOTAL TCDF	1	0.49	0.21	
TOTAL PeCDF	1	1.09	0.05	
TOTAL HxCDF	4	13.32	0.22	
TOTAL HpCDF	3	18.85	0.58	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-19**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-3**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.05	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.08	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.15	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.16	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.15	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	10.60	0.20	ND	6.54	105%	50-150
OCDD	152.69	0.23	ND	11.29	90%	50-150
2,3,7,8-TCDF	0.44	0.05	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.04	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.04	ND	ND	-	-
1,2,3,4,7,8-HxCDF	1.44	0.21	ND	ND	-	-
1,2,3,6,7,8-HxCDF	0.31	0.20	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.23	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.26	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	6.33	0.26	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.31	ND	ND	-	-
OCDF	16.70	0.18	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.05	<b>Total dioxins/furans</b>  <b>214.39 ppb</b>
TOTAL PeCDD	0	ND	0.08	
TOTAL HxCDD	1	0.87	0.16	
TOTAL HpCDD	2	19.91	0.20	
TOTAL TCDF	1	0.44	0.05	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>0.558 ppb</b>
TOTAL PeCDF	2	1.25	0.04	
TOTAL HxCDF	4	6.20	0.26	
TOTAL HpCDF	2	16.33	0.31	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-21**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-6**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.18	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.45	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	2.34	0.19	ND	ND	-	-
1,2,3,6,7,8-HxCDD	2.93	0.20	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	1.16	0.20	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	103.49	0.23	ND	6.54	105%	50-150
OCDD	1431.00	0.39	ND	11.29	90%	50-150
2,3,7,8-TCDF	1.74	0.08	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.20	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.21	ND	ND	-	-
1,2,3,4,7,8-HxCDF	2.93	0.31	ND	ND	-	-
1,2,3,6,7,8-HxCDF	1.38	0.30	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	0.36	0.35	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.39	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	39.60	0.33	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	3.42	0.39	ND	ND	-	-
OCDF	172.30	0.40	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	5	11.87	0.18	<b>Total dioxins/furans</b>  <b>2037.29 ppb</b>
TOTAL PeCDD	3	4.16	0.45	
TOTAL HxCDD	7	22.67	0.20	
TOTAL HpCDD	2	192.32	0.23	
TOTAL TCDF	10	10.74	0.08	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>4.352 ppb</b>
TOTAL PeCDF	3	1.86	0.21	
TOTAL HxCDF	7	37.03	0.39	
TOTAL HpCDF	3	153.34	0.39	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

Client Project: 8168  
 Client Sample: CSH-23

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

Ionics Project: 95-288  
 Ionics Sample: 3-88-1

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	0.89	0.05	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.08	ND	ND	-	-
1,2,3,6,7,8-HxCDD	11.21	0.08	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	2.12	0.08	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	431.74	0.04	ND	6.54	105%	50-150
OCDD	4918.36	0.54	ND	11.29	90%	50-150
2,3,7,8-TCDF	0.25	0.04	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.02	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.02	ND	ND	-	-
1,2,3,4,7,8-HxCDF	4.84	0.05	ND	ND	-	-
1,2,3,6,7,8-HxCDF	2.92	0.05	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	1.13	0.06	ND	ND	-	-
1,2,3,7,8,9-HxCDF	0.39	0.07	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	123.21	0.16	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	8.66	0.18	ND	ND	-	-
OCDF	874.15	0.34	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	0.30	0.01	<b>Total dioxins/furans</b>  <b>7463.83 ppb</b>
TOTAL PeCDD	4	2.03	0.05	
TOTAL HxCDD	9	66.27	0.08	
TOTAL HpCDD	2	825.65	0.04	
TOTAL TCDF	9	1.17	0.04	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>14.159 ppb</b>
TOTAL PeCDF	2	2.54	0.02	
TOTAL HxCDF	9	107.65	0.07	
TOTAL HpCDF	4	665.73	0.18	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-1**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-13**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	0.61	0.08	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	6.79	0.21	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	27.37	0.56	ND	ND	-	-
1,2,3,6,7,8-HxCDD	43.10	0.59	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	31.11	0.57	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	1356.23	0.21	ND	6.54	105%	50-150
OCDD	11299.96	1.55	ND	11.29	90%	50-150
2,3,7,8-TCDF	0.47	0.24	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.13	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.14	ND	ND	-	-
1,2,3,4,7,8-HxCDF	8.27	0.75	ND	ND	-	-
1,2,3,6,7,8-HxCDF	9.54	0.73	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	3.88	0.85	ND	ND	-	-
1,2,3,7,8,9-HxCDF	1.27	0.94	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	404.98	1.13	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	26.75	1.34	ND	ND	-	-
OCDF	2040.46	0.86	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	5	2.45	0.08	<b>Total dioxins/furans</b>  <b>18455.99 ppb</b>
TOTAL PeCDD	3	16.51	0.21	
TOTAL HxCDD	9	257.09	0.59	
TOTAL HpCDD	2	2582.31	0.21	
TOTAL TCDF	7	5.31	0.24	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>47.723 ppb</b>
TOTAL PeCDF	5	36.41	0.14	
TOTAL HxCDF	9	352.85	0.94	
TOTAL HpCDF	4	1862.64	1.34	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-2**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-14**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.29	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.33	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.45	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.47	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.46	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	7.72	0.49	ND	6.54	105%	50-150
OCDD	78.80	0.49	ND	11.29	90%	50-150
2,3,7,8-TCDF	ND	0.17	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.12	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.12	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.22	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.22	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.25	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.28	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	1.80	0.48	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.57	ND	ND	-	-
OCDF	7.04	0.48	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	Total dioxins/furans  109.43 ppb  2,3,7,8-TCDD toxicity equivalent  0.181 ppb
TOTAL TCDD	0	ND	0.29	
TOTAL PeCDD	0	ND	0.33	
TOTAL HxCDD	0	ND	0.47	
TOTAL HpCDD	2	15.17	0.49	
TOTAL TCDF	0	ND	0.17	
TOTAL PeCDF	0	ND	0.12	
TOTAL HxCDF	2	1.69	0.28	
TOTAL HpCDF	2	6.72	0.57	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-DA**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-12**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.11	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.24	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.29	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.30	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.30	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	22.44	0.66	ND	6.54	105%	50-150
OCDD	219.93	0.51	ND	11.29	90%	50-150
2,3,7,8-TCDF	ND	0.10	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.18	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.20	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.22	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.22	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.25	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.28	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	5.16	0.56	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.67	ND	ND	-	-
OCDF	24.72	0.18	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.11	<b>Total dioxins/furans</b>  <b>311.22 ppb</b>
TOTAL PeCDD	0	ND	0.24	
TOTAL HxCDD	1	1.07	0.30	
TOTAL HpCDD	2	41.22	0.66	
TOTAL TCDF	0	ND	0.10	<b>2,3,7,8-TCDD toxicity equivalent</b>  <b>0.521 ppb</b>
TOTAL PeCDF	0	ND	0.20	
TOTAL HxCDF	1	1.61	0.28	
TOTAL HpCDF	2	22.67	0.67	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

# **ANALYSIS REPORT**

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-1**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-91-11**

Date collected: 4/18/95  
 Date received: 4/24/95  
 Date extracted: 5/1/95  
 Date analyzed: 5/15/95

Sample size: 10.6 g  
 Matrix: Soil  
 Origin: Site G

File: F11606  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05	-		U
1,2,3,7,8-PeCDD	ND	0.29	-		U
1,2,3,4,7,8-HxCDD	ND	0.35	-		U
1,2,3,6,7,8-HxCDD	ND	0.37	-		U
1,2,3,7,8,9-HxCDD	ND	0.36	-		U
1,2,3,4,6,7,8-HpCDD	5.33	0.28	0.92	35:53	
OCDD	48.31	0.43	0.86	40:22	
2,3,7,8-TCDF	ND	0.09	-		U
1,2,3,7,8-PeCDF	ND	0.10	-		U
2,3,4,7,8-PeCDF	ND	0.10	-		U
1,2,3,4,7,8-HxCDF	ND	0.20	-		U
1,2,3,6,7,8-HxCDF	ND	0.20	-		U
2,3,4,6,7,8-HxCDF	ND	0.23	-		U
1,2,3,7,8,9-HxCDF	ND	0.25	-		U
1,2,3,4,6,7,8-HpCDF	ND	0.40	-		U
1,2,3,4,7,8,9-HpCDF	ND	0.47	-		U
OCDF	9.09	0.15	0.99	40:35	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.05	U
TOTAL PeCDD	0	ND	0.29	U
TOTAL HxCDD	0	ND	0.37	U
TOTAL HpCDD	2	10.23	0.28	
TOTAL TCDF	0	ND	0.09	U
TOTAL PeCDF	0	ND	0.10	U
TOTAL HxCDF	2	14.12	0.25	
TOTAL HpCDF	1	7.18	0.47	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**IONICS INTERNATIONAL, INC.**  
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**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-1**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-91-11**

Date collected: 4/18/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/15/95

Sample size: 10.6 g  
Matrix: Soil  
Origin: Site G

File: F11606  
Ret check: F11601  
Daily cal: F11602  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.15	66.8	0.83	21:11	-
13C12-2,3,7,8-TCDD	3.62	76.8	0.76	21:47	-
13C12-1,2,3,6,7,8-HxCDD	3.29	69.7	1.17	31:08	-
13C12-1,2,3,4,6,7,8-HpCDF	5.54	58.7	1.12	34:23	-
13C12-OCDD	4.65	49.2	0.91	40:21	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.72	72.9	21:48	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.87	21:33	-
13C12-1,2,3,7,8,9-HxCDD	1.31	31:38	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-3**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-5**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/11/95

Sample size: 10.42 g  
 Matrix: Soil  
 Origin: Site G

File: F11587  
 Ret check: F11584  
 Daily cal: F11585  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.04	-		U
1,2,3,7,8-PeCDD	ND	0.21	-		U
1,2,3,4,7,8-HxCDD	ND	0.30	-		U
1,2,3,6,7,8-HxCDD	ND	0.31	-		U
1,2,3,7,8,9-HxCDD	ND	0.31	-		U
1,2,3,4,6,7,8-HpCDD	2.29	0.19	1.07	35:50	J
OCDD	28.69	0.32	0.90	40:19	
2,3,7,8-TCDF	ND	0.07	-		U
1,2,3,7,8-PeCDF	ND	0.07	-		U
2,3,4,7,8-PeCDF	ND	0.07	-		U
1,2,3,4,7,8-HxCDF	ND	0.13	-		U
1,2,3,6,7,8-HxCDF	ND	0.13	-		U
2,3,4,6,7,8-HxCDF	ND	0.15	-		U
1,2,3,7,8,9-HxCDF	ND	0.16	-		U
1,2,3,4,6,7,8-HpCDF	ND	0.51	-		U
1,2,3,4,7,8,9-HpCDF	ND	0.61	-		U
OCDF	2.74	0.17	0.99	40:29	J

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.13	0.04	J
TOTAL PeCDD	0	ND	0.21	U
TOTAL HxCDD	0	ND	0.31	U
TOTAL HpCDD	2	4.80	0.19	
TOTAL TCDF	0	ND	0.07	U
TOTAL PeCDF	0	ND	0.07	U
TOTAL HxCDF	0	ND	0.16	U
TOTAL HpCDF	1	1.06	0.61	J

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-3**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-5**

Date collected: 4/19/95  
Date received: 4/20/95  
Date extracted: 4/25/95  
Date analyzed: 5/11/95

Sample size: 10.42 g  
Matrix: Soil  
Origin: Site G

File: F11587  
Ret check: F11584  
Daily cal: F11585  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.88	60.0	0.86	21:07	-
13C12-2,3,7,8-TCDD	3.28	68.3	0.75	21:45	-
13C12-1,2,3,6,7,8-HxCDD	2.68	55.8	1.37	31:05	-
13C12-1,2,3,4,6,7,8-HpCDF	4.46	46.5	1.15	34:21	-
13C12-OCDD	3.31	34.5	1.11	40:17	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.93	80.6	21:46	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.82	21:32	-
13C12-1,2,3,7,8,9-HxCDD	1.31	31:36	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-5**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-7**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/15/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11607  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.06	-		U
1,2,3,7,8-PeCDD	ND	0.31	-		U
1,2,3,4,7,8-HxCDD	ND	0.21	-		U
1,2,3,6,7,8-HxCDD	ND	0.22	-		U
1,2,3,7,8,9-HxCDD	ND	0.22	-		U
1,2,3,4,6,7,8-HpCDD	3.94	0.27	0.97	35:51	
OCDD	52.79	0.56	0.86	40:21	
2,3,7,8-TCDF	ND	0.06	-		U
1,2,3,7,8-PeCDF	ND	0.09	-		U
2,3,4,7,8-PeCDF	ND	0.10	-		U
1,2,3,4,7,8-HxCDF	ND	0.20	-		U
1,2,3,6,7,8-HxCDF	ND	0.19	-		U
2,3,4,6,7,8-HxCDF	ND	0.22	-		U
1,2,3,7,8,9-HxCDF	ND	0.25	-		U
1,2,3,4,6,7,8-HpCDF	1.52	0.30	1.01	34:24	J
1,2,3,4,7,8,9-HpCDF	ND	0.36	-		U
OCDF	5.69	0.15	0.86	40:32	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.06	U
TOTAL PeCDD	0	ND	0.31	U
TOTAL HxCDD	0	ND	0.22	U
TOTAL HpCDD	2	7.75	0.27	
TOTAL TCDF	0	ND	0.06	U
TOTAL PeCDF	0	ND	0.10	U
TOTAL HxCDF	0	ND	0.25	U
TOTAL HpCDF	2	4.89	0.36	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-5**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-7**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/15/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11607  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.86	57.4	0.76	21:11	-
13C12-2,3,7,8-TCDD	2.91	58.4	0.82	21:33	-
13C12-1,2,3,6,7,8-HxCDD	2.67	53.6	1.20	31:07	-
13C12-1,2,3,4,6,7,8-HpCDF	4.12	41.3	1.11	34:22	-
13C12-OCDD	2.95	29.5	0.98	40:20	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.36	94.6	21:48	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.82	21:33	-
13C12-1,2,3,7,8,9-HxCDD	1.24	31:37	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-7**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-2**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/10/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11582  
 Ret check: F11576  
 Daily cal: F11577  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.11	-		U
1,2,3,7,8-PeCDD	ND	0.15	-		U
1,2,3,4,7,8-HxCDD	ND	0.26	-		U
1,2,3,6,7,8-HxCDD	ND	0.27	-		U
1,2,3,7,8,9-HxCDD	ND	0.26	-		U
1,2,3,4,6,7,8-HpCDD	9.99	0.12	1.16	35:52	
OCDD	133.93	0.27	0.92	40:24	E
2,3,7,8-TCDF	ND	0.02	-		U
1,2,3,7,8-PeCDF	ND	0.06	-		U
2,3,4,7,8-PeCDF	ND	0.07	-		U
1,2,3,4,7,8-HxCDF	ND	0.19	-		U
1,2,3,6,7,8-HxCDF	ND	0.18	-		U
2,3,4,6,7,8-HxCDF	ND	0.22	-		U
1,2,3,7,8,9-HxCDF	ND	0.24	-		U
1,2,3,4,6,7,8-HpCDF	2.82	0.70	1.13	34:25	
1,2,3,4,7,8,9-HpCDF	ND	0.83	-	00:00	U
OCDF	11.65	0.20	0.92	40:34	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.11	U
TOTAL PeCDD	0	ND	0.15	U
TOTAL HxCDD	2	1.17	0.27	J
TOTAL HpCDD	2	18.28	0.12	
TOTAL TCDF	0	ND	0.02	U
TOTAL PeCDF	0	ND	0.07	U
TOTAL HxCDF	1	0.96	0.24	J
TOTAL HpCDF	2	11.55	0.83	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-7**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-2**

Date collected: 4/19/95  
Date received: 4/20/95  
Date extracted: 4/25/95  
Date analyzed: 5/10/95

Sample size: 10.02 g  
Matrix: Soil  
Origin: Site G

File: F11582  
Ret check: F11576  
Daily cal: F11577  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.60	52.2	0.83	21:11	-
13C12-2,3,7,8-TCDD	2.78	55.7	0.81	21:48	-
13C12-1,2,3,6,7,8-HxCDD	2.63	52.8	1.29	31:08	-
13C12-1,2,3,4,6,7,8-HpCDF	3.80	38.0	1.14	34:23	Y
13C12-OCDD	3.54	35.5	1.00	40:23	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.16	86.7	21:48	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.89	21:34	-
13C12-1,2,3,7,8,9-HxCDD	1.31	31:38	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-9**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-11**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/12/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11600  
 Ret check: F11591  
 Daily cal: F11593  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.09	-		U
1,2,3,7,8-PeCDD	ND	0.24	-		U
1,2,3,4,7,8-HxCDD	ND	0.18	-		U
1,2,3,6,7,8-HxCDD	1.02	0.19	1.14	30:21	J
1,2,3,7,8,9-HxCDD	ND	0.18	-		U
1,2,3,4,6,7,8-HpCDD	13.45	0.23	0.98	35:59	
OCDD	163.07	0.30	0.88	40:31	E
2,3,7,8-TCDF	ND	0.05	-		U
1,2,3,7,8-PeCDF	ND	0.08	-		U
2,3,4,7,8-PeCDF	ND	0.09	-		U
1,2,3,4,7,8-HxCDF	ND	0.25	-		U
1,2,3,6,7,8-HxCDF	ND	0.25	-		U
2,3,4,6,7,8-HxCDF	ND	0.29	-		U
1,2,3,7,8,9-HxCDF	ND	0.32	-		U
1,2,3,4,6,7,8-HpCDF	3.09	0.49	0.92	34:32	
1,2,3,4,7,8,9-HpCDF	ND	0.58	-		U
OCDF	19.13	0.27	0.93	40:42	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.09	U
TOTAL PeCDD	0	ND	0.24	U
TOTAL HxCDD	2	1.83	0.19	J
TOTAL HpCDD	2	25.12	0.23	
TOTAL TCDF	0	ND	0.05	U
TOTAL PeCDF	0	ND	0.09	U
TOTAL HxCDF	2	1.92	0.32	J
TOTAL HpCDF	2	15.42	0.58	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-9**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-11**

Date collected: 4/19/95  
Date received: 4/20/95  
Date extracted: 4/25/95  
Date analyzed: 5/12/95

Sample size: 10.02 g  
Matrix: Soil  
Origin: Site G

File: F11600  
Ret check: F11591  
Daily cal: F11593  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.47	49.5	0.75	21:14	-
13C12-2,3,7,8-TCDD	2.52	50.5	0.72	21:51	-
13C12-1,2,3,6,7,8-HxCDD	1.67	33.4	1.33	31:16	Y
13C12-1,2,3,4,6,7,8-HpCDF	3.14	31.5	1.10	34:31	Y
13C12-OCDD	2.18	21.8	0.95	40:30	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.23	89.4	21:52	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.79	21:37	-
13C12-1,2,3,7,8,9-HxCDD	1.26	31:45	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-11**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-4**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/11/95

Sample size: 10.15 g  
 Matrix: Soil  
 Origin: Site G

File: F11586  
 Ret check: F11584  
 Daily cal: F11585  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	-		U
1,2,3,7,8-PeCDD	ND	0.16	-		U
1,2,3,4,7,8-HxCDD	0.14	0.07	1.23	30:59	J
1,2,3,6,7,8-HxCDD	0.19	0.07	1.32	31:05	J
1,2,3,7,8,9-HxCDD	0.20	0.07	1.16	31:34	J
1,2,3,4,6,7,8-HpCDD	8.26	0.07	1.07	35:46	
OCDD	100.30	0.11	0.91	40:19	E
2,3,7,8-TCDF	0.04	0.04	0.81	21:06	J
1,2,3,7,8-PeCDF	ND	0.08	-		U
2,3,4,7,8-PeCDF	ND	0.09	-		U
1,2,3,4,7,8-HxCDF	0.15	0.04	1.09	29:55	J
1,2,3,6,7,8-HxCDF	0.09	0.04	1.10	30:03	J
2,3,4,6,7,8-HxCDF	ND	0.05	-		U
1,2,3,7,8,9-HxCDF	ND	0.05	-		U
1,2,3,4,6,7,8-HpCDF	2.04	0.18	0.97	34:02	J
1,2,3,4,7,8,9-HpCDF	ND	0.21	-		U
OCDF	13.85	0.09	0.96	40:29	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	2	0.18	0.03	J
TOTAL PeCDD	0	ND	0.16	U
TOTAL HxCDD	5	1.56	0.07	J
TOTAL HpCDD	2	17.04	0.07	
TOTAL TCDF	1	0.04	0.04	J
TOTAL PeCDF	1	0.14	0.09	J
TOTAL HxCDF	4	1.79	0.05	J
TOTAL HpCDF	2	10.63	0.21	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-11**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-4**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/11/95

Sample size: 10.15 g  
 Matrix: Soil  
 Origin: Site G

File: F11586  
 Ret check: F11584  
 Daily cal: F11585  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.23	65.7	0.84	21:05	-
13C12-2,3,7,8-TCDD	3.62	73.6	0.75	21:42	-
13C12-1,2,3,6,7,8-HxCDD	3.61	73.2	1.31	31:04	-
13C12-1,2,3,4,6,7,8-HpCDF	5.84	59.3	1.12	34:19	-
13C12-OCDD	4.58	46.5	0.98	40:18	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.17	88.3	21:43	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.82	21:28	-
13C12-1,2,3,7,8,9-HxCDD	1.32	31:33	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-13**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-9**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/12/95

Sample size: 10.11 g  
 Matrix: Soil  
 Origin: Site G

File: F11598  
 Ret check: F11591  
 Daily cal: F11593  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-		U
1,2,3,7,8-PeCDD	ND	0.03	-		U
1,2,3,4,7,8-HxCDD	ND	0.39	-		U
1,2,3,6,7,8-HxCDD	28.46	0.41	1.34	31:28	
1,2,3,7,8,9-HxCDD	11.01	0.40	1.37	31:56	
1,2,3,4,6,7,8-HpCDD	874.83	0.34	1.00	36:13	E
OCDD	10100.93	1.50	0.87	41:06	E
2,3,7,8-TCDF	14.76	0.93	0.84	21:20	
1,2,3,7,8-PeCDF	ND	0.12	-		U
2,3,4,7,8-PeCDF	7.90	0.13	1.51	26:24	
1,2,3,4,7,8-HxCDF	35.87	0.64	1.28	30:19	
1,2,3,6,7,8-HxCDF	8.44	0.62	1.22	30:26	
2,3,4,6,7,8-HxCDF	10.23	0.72	1.31	31:14	
1,2,3,7,8,9-HxCDF	4.54	0.80	1.26	32:21	
1,2,3,4,6,7,8-HpCDF	610.83	1.48	1.09	34:44	E
1,2,3,4,7,8,9-HpCDF	ND	1.76	-		U
OCDF	3885.98	1.25	0.92	41:12	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.29	0.01	J
TOTAL PeCDD	0	ND	0.03	U
TOTAL HxCDD	4	131.39	0.41	E
TOTAL HpCDD	2	1677.27	0.34	E
TOTAL TCDF	3	31.27	0.93	E
TOTAL PeCDF	7	97.87	0.13	E
TOTAL HxCDF	10	772.81 <sup>*</sup>	0.80	E
TOTAL HpCDF	2	2665.08	1.76	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-13**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-9**

Date collected: 4/19/95  
Date received: 4/20/95  
Date extracted: 4/25/95  
Date analyzed: 5/12/95

Sample size: 10.11 g  
Matrix: Soil  
Origin: Site G

File: F11598  
Ret check: F11591  
Daily cal: F11593  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	0.56	11.3	0.88	21:20	Y
13C12-2,3,7,8-TCDD	6.31	127.5	0.66	22:08	Y
13C12-1,2,3,6,7,8-HxCDD	2.40	48.6	1.22	31:27	-
13C12-1,2,3,4,6,7,8-HpCDF	3.84	38.8	1.17	34:43	Y
13C12-OCDD	2.60	26.3	1.78	41:05	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	6.28	253.9	22:12	Y

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.66	21:54	-
13C12-1,2,3,7,8,9-HxCDD	1.19	31:55	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-15**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-8**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/11/95

Sample size: 10.18 g  
 Matrix: Soil  
 Origin: Site G

File: F11597  
 Ret check: F11591  
 Daily cal: F11593  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.16	-		U
1,2,3,7,8-PeCDD	ND	0.66	-		U
1,2,3,4,7,8-HxCDD	ND	0.81	-		U
1,2,3,6,7,8-HxCDD	ND	0.84	-		U
1,2,3,7,8,9-HxCDD	ND	0.82	-		U
1,2,3,4,6,7,8-HpCDD	13.04	0.53	1.13	35:51	
OCDD	179.19	0.67	0.86	40:20	E
2,3,7,8-TCDF	2.27	1.93	0.69	21:10	
1,2,3,7,8-PeCDF	ND	0.20	-		U
2,3,4,7,8-PeCDF	ND	0.22	-		U
1,2,3,4,7,8-HxCDF	ND	0.56	-		U
1,2,3,6,7,8-HxCDF	ND	0.54	-		U
2,3,4,6,7,8-HxCDF	ND	0.63	-		U
1,2,3,7,8,9-HxCDF	ND	0.70	-		U
1,2,3,4,6,7,8-HpCDF	6.10	1.24	0.97	34:23	
1,2,3,4,7,8,9-HpCDF	ND	1.48	-		U
OCDF	29.65	0.38	0.94	40:32	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	1.81	0.16	
TOTAL PeCDD	1	2.21	0.66	
TOTAL HxCDD	1	2.15	0.84	
TOTAL HpCDD	2	27.58	0.53	J
TOTAL TCDF	9	8.52	1.93	
TOTAL PeCDF	0	1.76	0.22	
TOTAL HxCDF	2	4.84	0.70	
TOTAL HpCDF	2	24.35	1.48	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-15**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-8**

Date collected: 4/19/95  
Date received: 4/20/95  
Date extracted: 4/25/95  
Date analyzed: 5/11/95

Sample size: 10.18 g  
Matrix: Soil  
Origin: Site G

File: F11597  
Ret check: F11591  
Daily cal: F11593  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	1.36	27.7	0.77	21:10	Y
13C12-2,3,7,8-TCDD	1.34	27.2	0.85	21:47	Y
13C12-1,2,3,6,7,8-HxCDD	0.90	18.4	1.08	31:09	Y
13C12-1,2,3,4,6,7,8-HpCDF	1.37	14.0	1.11	34:24	Y
13C12-OCDD	1.13	11.6	0.94	40:20	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.36	96.0	21:49	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.81	21:35	-
13C12-1,2,3,7,8,9-HxCDD	1.21	31:38	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-17**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-10**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/12/95

Sample size: 10 g  
 Matrix: Soil  
 Origin: Site G

File: F11599  
 Ret check: F11591  
 Daily cal: F11593  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05	-		U
1,2,3,7,8-PeCDD	ND	0.12	-		U
1,2,3,4,7,8-HxCDD	ND	0.12	-		U
1,2,3,6,7,8-HxCDD	0.89	0.13	1.29	31:14	J
1,2,3,7,8,9-HxCDD	ND	0.12	-		U
1,2,3,4,6,7,8-HpCDD	29.43	0.16	1.04	35:56	
OCDD	401.35	0.52	0.88	40:26	E
2,3,7,8-TCDF	0.49	0.21	0.69	21:15	J
1,2,3,7,8-PeCDF	ND	0.05	-		U
2,3,4,7,8-PeCDF	ND	0.05	-		U
1,2,3,4,7,8-HxCDF	1.98	0.18	1.11	30:04	J
1,2,3,6,7,8-HxCDF	1.29	0.17	1.21	30:13	J
2,3,4,6,7,8-HxCDF	ND	0.20	-		U
1,2,3,7,8,9-HxCDF	ND	0.22	-		U
1,2,3,4,6,7,8-HpCDF	14.96	0.49	1.03	34:29	
1,2,3,4,7,8,9-HpCDF	1.18	0.58	1.07	36:35	J
OCDF	85.10	0.77	0.91	40:36	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	1.85	0.05	
TOTAL PeCDD	0	ND	0.12	U
TOTAL HxCDD	3	4.87	0.13	
TOTAL HpCDD	2	30.02	0.16	
TOTAL TCDF	1	0.49	0.21	J
TOTAL PeCDF	1	1.09	0.05	
TOTAL HxCDF	4	13.32	0.22	
TOTAL HpCDF	3	18.85	0.58	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-17**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-10**

Date collected: 4/19/95  
Date received: 4/20/95  
Date extracted: 4/25/95  
Date analyzed: 5/12/95

Sample size: 10 g  
Matrix: Soil  
Origin: Site G

File: F11599  
Ret check: F11591  
Daily cal: F11593  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.33	46.5	0.82	21:14	-
13C12-2,3,7,8-TCDD	3.54	70.9	0.70	21:50	-
13C12-1,2,3,6,7,8-HxCDD	1.82	36.4	1.26	31:13	Y
13C12-1,2,3,4,6,7,8-HpCDF	2.66	26.6	1.04	34:28	Y
13C12-OCDD	2.02	20.2	0.96	40:25	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.26	90.4	21:51	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.82	21:37	-
13C12-1,2,3,7,8,9-HxCDD	1.30	31:42	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-19**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-3**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/10/95

Sample size: 10.06 g  
 Matrix: Soil  
 Origin: Site G

File: F11583  
 Ret check: F11576  
 Daily cal: F11577  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05	-		U
1,2,3,7,8-PeCDD	ND	0.08	-		U
1,2,3,4,7,8-HxCDD	ND	0.15	-		U
1,2,3,6,7,8-HxCDD	ND	0.16	-		U
1,2,3,7,8,9-HxCDD	ND	0.15	-		U
1,2,3,4,6,7,8-HpCDD	10.60	0.20	1.06	35:54	
OCDD	152.69	0.23	0.91	40:25	E
2,3,7,8-TCDF	0.44	0.05	0.80	21:12	J
1,2,3,7,8-PeCDF	ND	0.04	-		U
2,3,4,7,8-PeCDF	ND	0.04	-		U
1,2,3,4,7,8-HxCDF	1.44	0.21	1.29	30:00	J
1,2,3,6,7,8-HxCDF	0.31	0.20	1.22	30:09	J
2,3,4,6,7,8-HxCDF	ND	0.23	-		U
1,2,3,7,8,9-HxCDF	ND	0.26	-		U
1,2,3,4,6,7,8-HpCDF	6.33	0.26	1.12	34:26	
1,2,3,4,7,8,9-HpCDF	ND	0.31	-		U
OCDF	16.70	0.18	0.95	40:35	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.05	U
TOTAL PeCDD	0	ND	0.08	U
TOTAL HxCDD	1	0.87	0.16	J
TOTAL HpCDD	2	19.91	0.20	
TOTAL TCDF	1	0.44	0.05	J
TOTAL PeCDF	2	1.25	0.04	
TOTAL HxCDF	4	6.20	0.26	
TOTAL HpCDF	2	16.33	0.31	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-19**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-3**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/10/95

Sample size: 10.06 g  
 Matrix: Soil  
 Origin: Site G

File: F11583  
 Ret check: F11576  
 Daily cal: F11577  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.16	63.6	0.85	21:11	-
13C12-2,3,7,8-TCDD	5.01	100.7	0.71	21:48	-
13C12-1,2,3,6,7,8-HxCDD	3.10	62.5	1.32	31:10	-
13C12-1,2,3,4,6,7,8-HpCDF	5.34	53.7	1.15	34:25	-
13C12-OCDD	4.93	49.6	0.98	40:23	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.23	89.5	21:49	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:35	-
13C12-1,2,3,7,8,9-HxCDD	1.31	31:39	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-21**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-6**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/11/95

Sample size: 10.95 g  
 Matrix: Soil  
 Origin: Site G

File: F11588  
 Ret check: F11584  
 Daily cal: F11585  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.18	-		U
1,2,3,7,8-PeCDD	ND	0.45	-		U
1,2,3,4,7,8-HxCDD	2.34	0.19	1.30	31:05	
1,2,3,6,7,8-HxCDD	2.93	0.20	1.26	31:11	
1,2,3,7,8,9-HxCDD	1.16	0.20	1.31	31:40	J
1,2,3,4,6,7,8-HpCDD	103.49	0.23	1.06	35:53	E
OCDD	1431.00	0.39	0.93	40:28	E
2,3,7,8-TCDF	1.74	0.08	0.77	21:10	
1,2,3,7,8-PeCDF	ND	0.20	-		U
2,3,4,7,8-PeCDF	ND	0.21	-		U
1,2,3,4,7,8-HxCDF	2.93	0.31	1.27	30:02	
1,2,3,6,7,8-HxCDF	1.38	0.30	1.26	30:09	J
2,3,4,6,7,8-HxCDF	0.36	0.35	1.19	30:56	J
1,2,3,7,8,9-HxCDF	ND	0.39	-		U
1,2,3,4,6,7,8-HpCDF	39.60	0.33	1.08	34:28	
1,2,3,4,7,8,9-HpCDF	3.42	0.39	1.22	36:32	
OCDF	172.30	0.40	0.93	40:35	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	5	11.87	0.18	
TOTAL PeCDD	3	4.16	0.45	
TOTAL HxCDD	7	22.67	0.20	
TOTAL HpCDD	2	192.32	0.23	E
TOTAL TCDF	10	10.74	0.08	
TOTAL PeCDF	3	1.86	0.21	
TOTAL HxCDF	7	37.03	0.39	
TOTAL HpCDF	3	153.34	0.39	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-21**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-6**

Date collected: 4/19/95  
Date received: 4/20/95  
Date extracted: 4/25/95  
Date analyzed: 5/11/95

Sample size: 10.95 g  
Matrix: Soil  
Origin: Site G

File: F11588  
Ret check: F11584  
Daily cal: F11585  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.55	55.9	0.83	21:10	-
13C12-2,3,7,8-TCDD	2.76	60.5	0.78	21:48	-
13C12-1,2,3,6,7,8-HxCDD	1.81	39.7	1.37	31:11	Y
13C12-1,2,3,4,6,7,8-HpCDF	2.56	28.0	1.06	34:26	Y
13C12-OCDD	1.64	18.0	1.07	40:26	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.07	90.6	21:48	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:33	-
13C12-1,2,3,7,8,9-HxCDD	1.37	31:38	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-23**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-1**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/10/95

Sample size: 10.11 g  
 Matrix: Soil  
 Origin: Site G

File: F11581  
 Ret check: F11576  
 Daily cal: F11577  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-		U
1,2,3,7,8-PeCDD	0.89	0.05	1.29	26:35	J
1,2,3,4,7,8-HxCDD	ND	0.08	-		U
1,2,3,6,7,8-HxCDD	11.21	0.08	1.38	31:10	
1,2,3,7,8,9-HxCDD	2.12	0.08	1.35	31:38	J
1,2,3,4,6,7,8-HpCDD	431.74	0.04	1.05	35:56	E
OCDD	4918.36	0.54	0.92	40:51	E
2,3,7,8-TCDF	0.25	0.04	0.75	21:11	J
1,2,3,7,8-PeCDF	ND	0.02	-		U
2,3,4,7,8-PeCDF	ND	0.02	-		U
1,2,3,4,7,8-HxCDF	4.84	0.05	1.27	29:59	
1,2,3,6,7,8-HxCDF	2.92	0.05	1.30	30:08	
2,3,4,6,7,8-HxCDF	1.13	0.06	1.44	49:56	J
1,2,3,7,8,9-HxCDF	0.39	0.07	1.19	32:04	J
1,2,3,4,6,7,8-HpCDF	123.21	0.16	1.06	34:26	E
1,2,3,4,7,8,9-HpCDF	8.66	0.18	1.07	36:31	
OCDF	874.15	0.34	0.92	40:55	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.30	0.01	J
TOTAL PeCDD	4	2.03	0.05	
TOTAL HxCDD	9	66.27	0.08	E
TOTAL HpCDD	2	825.65	0.04	E
TOTAL TCDF	9	1.17	0.04	
TOTAL PeCDF	2	2.54	0.02	
TOTAL HxCDF	9	107.65	0.07	E
TOTAL HpCDF	4	665.73	0.18	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-23**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-1**

Date collected: 4/19/95  
Date received: 4/20/95  
Date extracted: 4/25/95  
Date analyzed: 5/10/95

Sample size: 10.11 g  
Matrix: Soil  
Origin: Site G

File: F11581  
Ret check: F11576  
Daily cal: F11577  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.51	71.0	0.85	21:10	-
13C12-2,3,7,8-TCDD	4.17	84.3	0.77	21:47	-
13C12-1,2,3,6,7,8-HxCDD	3.40	68.8	1.37	31:09	-
13C12-1,2,3,4,6,7,8-HpCDF	6.18	62.5	1.14	34:25	-
13C12-OCDD	5.63	57.0	1.48	40:51	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.20	89.1	21:48	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:34	-
13C12-1,2,3,7,8,9-HxCDD	1.32	31:38	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-1**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-13**

Date collected: 4/17/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/15/95

Sample size: 10.16 g  
 Matrix: Soil  
 Origin: Site G

File: F11604  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	0.61	0.08	0.76	21:50	J
1,2,3,7,8-PeCDD	6.79	0.21	1.67	26:36	
1,2,3,4,7,8-HxCDD	27.37	0.56	1.34	31:07	
1,2,3,6,7,8-HxCDD	43.10	0.59	1.27	31:15	
1,2,3,7,8,9-HxCDD	31.11	0.57	1.30	31:42	
1,2,3,4,6,7,8-HpCDD	1356.23	0.21	0.98	36:01	E
OCDD	11299.96	1.55	0.86	40:55	E
2,3,7,8-TCDF	0.47	0.24	0.71	21:13	J
1,2,3,7,8-PeCDF	ND	0.13	-		U
2,3,4,7,8-PeCDF	ND	0.14	-		U
1,2,3,4,7,8-HxCDF	8.27	0.75	1.27	30:02	
1,2,3,6,7,8-HxCDF	9.54	0.73	1.21	30:08	
2,3,4,6,7,8-HxCDF	3.88	0.85	1.39	31:00	
1,2,3,7,8,9-HxCDF	1.27	0.94	1.20	32:06	J
1,2,3,4,6,7,8-HpCDF	404.98	1.13	1.04	34:30	E
1,2,3,4,7,8,9-HpCDF	26.75	1.34	1.04	36:35	
OCDF	2040.46	0.86	0.90	40:45	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	5	2.45	0.08	
TOTAL PeCDD	3	16.51	0.21	
TOTAL HxCDD	9	257.09	0.59	E
TOTAL HpCDD	2	2582.31	0.21	E
TOTAL TCDF	7	5.31	0.24	
TOTAL PeCDF	5	36.41	0.14	E
TOTAL HxCDF	9	352.85	0.94	E
TOTAL HpCDF	4	1862.64	1.34	E

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-1**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-13**

Date collected: 4/17/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/15/95

Sample size: 10.16 g  
 Matrix: Soil  
 Origin: Site G

File: F11604  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.24	65.9	0.81	21:12	-
13C12-2,3,7,8-TCDD	3.98	80.8	0.75	21:49	-
13C12-1,2,3,6,7,8-HxCDD	2.27	46.1	1.28	31:13	-
13C12-1,2,3,4,6,7,8-HpCDF	4.11	41.7	1.04	34:28	-
13C12-OCDD	3.13	31.8	1.98	40:55	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.18	88.4	21:50	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:35	-
13C12-1,2,3,7,8,9-HxCDD	1.25	31:41	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-2**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-14**

Date collected: 4/17/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/15/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11605  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.29	-		U
1,2,3,7,8-PeCDD	ND	0.33	-		U
1,2,3,4,7,8-HxCDD	ND	0.45	-		U
1,2,3,6,7,8-HxCDD	ND	0.47	-		U
1,2,3,7,8,9-HxCDD	ND	0.46	-		U
1,2,3,4,6,7,8-HpCDD	7.72	0.49	0.94	35:51	
OCDD	78.80	0.49	0.87	40:20	
2,3,7,8-TCDF	ND	0.17	-		U
1,2,3,7,8-PeCDF	ND	0.12	-		U
2,3,4,7,8-PeCDF	ND	0.12	-		U
1,2,3,4,7,8-HxCDF	ND	0.22	-		U
1,2,3,6,7,8-HxCDF	ND	0.22	-		U
2,3,4,6,7,8-HxCDF	ND	0.25	-		U
1,2,3,7,8,9-HxCDF	ND	0.28	-		U
1,2,3,4,6,7,8-HpCDF	1.80	0.48	1.06	34:23	J
1,2,3,4,7,8,9-HpCDF	ND	0.57	-		U
OCDF	7.04	0.48	0.92	40:32	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.29	U
TOTAL PeCDD	0	ND	0.33	U
TOTAL HxCDD	0	ND	0.47	U
TOTAL HpCDD	2	15.17	0.49	
TOTAL TCDF	0	ND	0.17	U
TOTAL PeCDF	0	ND	0.12	U
TOTAL HxCDF	2	1.69	0.28	J
TOTAL HpCDF	2	6.72	0.57	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**IONICS INTERNATIONAL, INC.**  
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**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-2**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-14**

Date collected: 4/17/95  
Date received: 4/20/95  
Date extracted: 4/25/95  
Date analyzed: 5/15/95

Sample size: 10.07 g  
Matrix: Soil  
Origin: Site G

File: F11605  
Ret check: F11601  
Daily cal: F11602  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.64	53.1	0.82	21:10	-
13C12-2,3,7,8-TCDD	2.52	50.7	0.80	21:47	-
13C12-1,2,3,6,7,8-HxCDD	2.58	52.0	1.20	31:07	-
13C12-1,2,3,4,6,7,8-HpCDF	3.68	37.1	1.08	34:23	Y
13C12-OCDD	3.03	30.5	0.92	40:20	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.31	92.9	21:47	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.84	21:33	-
13C12-1,2,3,7,8,9-HxCDD	1.29	31:38	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-DA**

**SAMPLE ANALYSIS**  
**REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-12**

Date collected: 4/17/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/15/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11603  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.11	-		U
1,2,3,7,8-PeCDD	ND	0.24	-		U
1,2,3,4,7,8-HxCDD	ND	0.29	-		U
1,2,3,6,7,8-HxCDD	ND	0.30	-		U
1,2,3,7,8,9-HxCDD	ND	0.30	-		U
1,2,3,4,6,7,8-HpCDD	22.44	0.66	0.94	35:43	
OCDD	219.93	0.51	0.91	40:14	E
2,3,7,8-TCDF	ND	0.10	-		U
1,2,3,7,8-PeCDF	ND	0.18	-		U
2,3,4,7,8-PeCDF	ND	0.20	-		U
1,2,3,4,7,8-HxCDF	ND	0.22	-		U
1,2,3,6,7,8-HxCDF	ND	0.22	-		U
2,3,4,6,7,8-HxCDF	ND	0.25	-		U
1,2,3,7,8,9-HxCDF	ND	0.28	-		U
1,2,3,4,6,7,8-HpCDF	5.16	0.56	1.08	34:17	
1,2,3,4,7,8,9-HpCDF	ND	0.67	-		U
OCDF	24.72	0.18	0.97	40:25	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.11	U
TOTAL PeCDD	0	ND	0.24	U
TOTAL HxCDD	1	1.07	0.30	J
TOTAL HpCDD	2	41.22	0.66	
TOTAL TCDF	0	ND	0.10	U
TOTAL PeCDF	0	ND	0.20	U
TOTAL HxCDF	1	1.61	0.28	J
TOTAL HpCDF	2	22.67	0.67	

\*Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-DA**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-12**

Date collected: 4/17/95  
Date received: 4/20/95  
Date extracted: 4/25/95  
Date analyzed: 5/15/95

Sample size: 10.03 g  
Matrix: Soil  
Origin: Site G

File: F11603  
Ret check: F11601  
Daily cal: F11602  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	1.60	32.2	0.79	21:04	Y
13C12-2,3,7,8-TCDD	1.82	36.6	0.68	21:41	Y
13C12-1,2,3,6,7,8-HxCDD	1.76	35.4	1.21	31:00	Y
13C12-1,2,3,4,6,7,8-HpCDF	2.67	26.8	1.09	34:16	Y
13C12-OCDD	2.40	24.1	0.89	40:14	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.28	91.7	21:42	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.80	21:27	-
13C12-1,2,3,7,8,9-HxCDD	1.22	31:30	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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# **TOXICITY EQUIVALENCE REPORT**

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-1**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-91-11**

Date collected: 4/18/95  
 Date received: 4/24/95  
 Date extracted: 5/1/95  
 Date analyzed: 5/15/95

Sample size: 10.6 g  
 Matrix: Soil  
 Origin: Site G

File: F11606  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	5.33	x	0.010	=	0.053
OCDD	48.31	x	0.001	=	0.048
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	ND	x	0.010	=	-
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	9.09	x	0.001	=	0.009

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.11 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-3**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-5**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/11/95

Sample size: 10.42 g  
 Matrix: Soil  
 Origin: Site G

File: F11587  
 Ret check: F11584  
 Daily cal: F11585  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	2.29	x	0.010	=	0.023
OCDD	28.69	x	0.001	=	0.029
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	ND	x	0.010	=	-
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	2.74	x	0.001	=	0.003

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.055 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-5**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-7**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/15/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11607  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	3.94	x	0.010	=	0.039
OCDD	52.79	x	0.001	=	0.053
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	1.52	x	0.010	=	0.015
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	5.69	x	0.001	=	0.006

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.113 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-7**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-2**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/10/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11582  
 Ret check: F11576  
 Daily cal: F11577  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	9.99	x	0.010	=	0.100
OCDD	133.93	x	0.001	=	0.134
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	2.82	x	0.010	=	0.028
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	11.65	x	0.001	=	0.012

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.274 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-9**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-11**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/12/95

Sample size: 10.02 g  
 Matrix: Soil  
 Origin: Site G

File: F11600  
 Ret check: F11591  
 Daily cal: F11593  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	1.02	x	0.100	=	0.102
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	13.45	x	0.010	=	0.135
OCDD	163.07	x	0.001	=	0.163
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	3.09	x	0.010	=	0.031
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	19.13	x	0.001	=	0.019

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.45 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-11**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-4**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/11/95

Sample size: 10.15 g  
 Matrix: Soil  
 Origin: Site G

File: F11586  
 Ret check: F11584  
 Daily cal: F11585  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.14	x	0.100	=	0.014
1,2,3,6,7,8-HxCDD	0.19	x	0.100	=	0.019
1,2,3,7,8,9-HxCDD	0.20	x	0.100	=	0.020
1,2,3,4,6,7,8-HpCDD	8.26	x	0.010	=	0.083
OCDD	100.30	x	0.001	=	0.100
2,3,7,8-TCDF	0.04	x	0.100	=	0.004
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	0.15	x	0.100	=	0.015
1,2,3,6,7,8-HxCDF	0.09	x	0.100	=	0.009
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	2.04	x	0.010	=	0.020
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	13.85	x	0.001	=	0.014

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.298 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-13**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-9**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/12/95

Sample size: 10.11 g  
 Matrix: Soil  
 Origin: Site G

File: F11598  
 Ret check: F11591  
 Daily cal: F11593  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	28.46	x	0.100	=	2.846
1,2,3,7,8,9-HxCDD	11.01	x	0.100	=	1.101
1,2,3,4,6,7,8-HpCDD	874.83	x	0.010	=	8.748
OCDD	10100.93	x	0.001	=	10.101
2,3,7,8-TCDF	14.76	x	0.100	=	1.476
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	7.90	x	0.500	=	3.952
1,2,3,4,7,8-HxCDF	35.87	x	0.100	=	3.587
1,2,3,6,7,8-HxCDF	8.44	x	0.100	=	0.844
2,3,4,6,7,8-HxCDF	10.23	x	0.100	=	1.023
1,2,3,7,8,9-HxCDF	4.54	x	0.100	=	0.454
1,2,3,4,6,7,8-HpCDF	610.83	x	0.010	=	6.108
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	3885.98	x	0.001	=	3.886

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 44.126 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-15**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-8**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/11/95

Sample size: 10.18 g  
 Matrix: Soil  
 Origin: Site G

File: F11597  
 Ret check: F11591  
 Daily cal: F11593  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	13.04	x	0.010	=	0.130
OCDD	179.19	x	0.001	=	0.179
2,3,7,8-TCDF	2.27	x	0.100	=	0.227
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	6.10	x	0.010	=	0.061
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	29.65	x	0.001	=	0.030

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.627 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-17**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-10**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/12/95

Sample size: 10 g  
 Matrix: Soil  
 Origin: Site G

File: F11599  
 Ret check: F11591  
 Daily cal: F11593  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF	TEQ (ppb)	
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	0.89	x	0.100	=	0.089
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	29.43	x	0.010	=	0.294
OCDD	401.35	x	0.001	=	0.401
2,3,7,8-TCDF	0.49	x	0.100	=	0.049
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	1.98	x	0.100	=	0.198
1,2,3,6,7,8-HxCDF	1.29	x	0.100	=	0.129
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	14.96	x	0.010	=	0.150
1,2,3,4,7,8,9-HpCDF	1.18	x	0.010	=	0.012
OCDF	85.10	x	0.001	=	0.085

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 1.407 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-19**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-3**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/10/95

Sample size: 10.06 g  
 Matrix: Soil  
 Origin: Site G

File: F11583  
 Ret check: F11576  
 Daily cal: F11577  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	10.60	x	0.010	=	0.106
OCDD	152.69	x	0.001	=	0.153
2,3,7,8-TCDF	0.44	x	0.100	=	0.044
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	1.44	x	0.100	=	0.144
1,2,3,6,7,8-HxCDF	0.31	x	0.100	=	0.031
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	6.33	x	0.010	=	0.063
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	16.70	x	0.001	=	0.017

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.558 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-21**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-6**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/11/95

Sample size: 10.95 g  
 Matrix: Soil  
 Origin: Site G

File: F11588  
 Ret check: F11584  
 Daily cal: F11585  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	2.34	x	0.100	=	0.234
1,2,3,6,7,8-HxCDD	2.93	x	0.100	=	0.293
1,2,3,7,8,9-HxCDD	1.16	x	0.100	=	0.116
1,2,3,4,6,7,8-HpCDD	103.49	x	0.010	=	1.035
OCDD	1431.00	x	0.001	=	1.431
2,3,7,8-TCDF	1.74	x	0.100	=	0.174
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	2.93	x	0.100	=	0.293
1,2,3,6,7,8-HxCDF	1.38	x	0.100	=	0.138
2,3,4,6,7,8-HxCDF	0.36	x	0.100	=	0.036
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	39.60	x	0.010	=	0.396
1,2,3,4,7,8,9-HpCDF	3.42	x	0.010	=	0.034
OCDF	172.30	x	0.001	=	0.172

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 4.352 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-23**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-1**

Date collected: 4/19/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/10/95

Sample size: 10.11 g  
 Matrix: Soil  
 Origin: Site G

File: F11581  
 Ret check: F11576  
 Daily cal: F11577  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	0.89	x	0.500	=	0.445
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	11.21	x	0.100	=	1.121
1,2,3,7,8,9-HxCDD	2.12	x	0.100	=	0.212
1,2,3,4,6,7,8-HpCDD	431.74	x	0.010	=	4.317
OCDD	4918.36	x	0.001	=	4.918
2,3,7,8-TCDF	0.25	x	0.100	=	0.025
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	4.84	x	0.100	=	0.484
1,2,3,6,7,8-HxCDF	2.92	x	0.100	=	0.292
2,3,4,6,7,8-HxCDF	1.13	x	0.100	=	0.113
1,2,3,7,8,9-HxCDF	0.39	x	0.100	=	0.039
1,2,3,4,6,7,8-HpCDF	123.21	x	0.010	=	1.232
1,2,3,4,7,8,9-HpCDF	8.66	x	0.010	=	0.087
OCDF	874.15	x	0.001	=	0.874

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 14.159 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-1**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-13**

Date collected: 4/17/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/15/95

Sample size: 10.16 g  
 Matrix: Soil  
 Origin: Site G

File: F11604  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	0.61	x	1.000	=	0.607
1,2,3,7,8-PeCDD	6.79	x	0.500	=	3.395
1,2,3,4,7,8-HxCDD	27.37	x	0.100	=	2.737
1,2,3,6,7,8-HxCDD	43.10	x	0.100	=	4.310
1,2,3,7,8,9-HxCDD	31.11	x	0.100	=	3.111
1,2,3,4,6,7,8-HpCDD	1356.23	x	0.010	=	13.562
OCDD	11299.96	x	0.001	=	11.300
2,3,7,8-TCDF	0.47	x	0.100	=	0.047
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	8.27	x	0.100	=	0.827
1,2,3,6,7,8-HxCDF	9.54	x	0.100	=	0.954
2,3,4,6,7,8-HxCDF	3.88	x	0.100	=	0.388
1,2,3,7,8,9-HxCDF	1.27	x	0.100	=	0.127
1,2,3,4,6,7,8-HpCDF	404.98	x	0.010	=	4.050
1,2,3,4,7,8,9-HpCDF	26.75	x	0.010	=	0.268
OCDF	2040.46	x	0.001	=	2.040

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 47.723 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-2**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-14**

Date collected: 4/17/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/15/95

Sample size: 10.07 g  
 Matrix: Soil  
 Origin: Site G

File: F11605  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	7.72	x	0.010	=	0.077
OCDD	78.80	x	0.001	=	0.079
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	1.80	x	0.010	=	0.018
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	7.04	x	0.001	=	0.007

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.181 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: OS-DA**

**SAMPLE ANALYSIS**  
**TEF REPORT**

**Ionics Project: 95-288**  
**Ionics Sample: 3-88-12**

Date collected: 4/17/95  
 Date received: 4/20/95  
 Date extracted: 4/25/95  
 Date analyzed: 5/15/95

Sample size: 10.03 g  
 Matrix: Soil  
 Origin: Site G

File: F11603  
 Ret check: F11601  
 Daily cal: F11602  
 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	22.44	x	0.010	=	0.224
OCDD	219.93	x	0.001	=	0.220
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	5.16	x	0.010	=	0.052
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	24.72	x	0.001	=	0.025

**Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.521 ppb**

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Sanget  
Area 1

1495 Site G  
23.78 TCDA  
~~23.78~~ Data  
(QA/QC is in file  
room)

(copy)

## SUMMARY REPORT

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-2**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-9**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.10	ND	2.32	93%	50-150

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-4**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-10**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.11	ND	2.32	93%	50-150

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

Client Project: 8168  
Client Sample: CSH-6

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

Lab Project: 95-291  
Lab Sample: 3-91-1

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.05	ND	2.32	93%	50-150

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

Client Project: 8168  
Client Sample: CSH-8

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

Lab Project: 95-291  
Lab Sample: 3-91-2

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.08	ND	2.32	93%	50-150

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

Client Project: 8168  
Client Sample: CSH-10

SAMPLE ANALYSIS  
SUMMARY REPORT

Lab Project: 95-291  
Lab Sample: 3-91-3

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.03	ND	2.32	93%	50-150



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-14**

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-4**

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.06	ND	2.32	93%	50-150

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 1613**

Client Project: 8168  
Client Sample: CSH-16

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

Lab Project: 95-291  
Lab Sample: 3-91-5

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.002	ND	2.32	93%	50-150

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

Client Project: 8168  
Client Sample: CSH-18

*SAMPLE ANALYSIS*  
*SUMMARY REPORT*

Lab Project: 95-291  
Lab Sample: 3-91-6

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.14	ND	2.32	93%	50-150

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

Client Project: 8168  
Client Sample: CSH-20

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

Lab Project: 95-291  
Lab Sample: 3-91-7

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	0.23	0.05	ND	2.32	93%	50-150

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

Client Project: 8168  
Client Sample: CSH-22

**SAMPLE ANALYSIS**  
**SUMMARY REPORT**

Lab Project: 95-291  
Lab Sample: 3-91-8

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.07	ND	2.32	93%	50-150

# **ANALYSIS REPORT**

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-2**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-9**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.72 g  
Matrix: Soil  
Origin: Site G

File: F11635  
Ret check: F11628  
Daily cal: F11629  
Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.10	-	00:00	U

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-2**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-9**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.72 g  
Matrix: Soil  
Origin: Site G

File: F11635  
Ret check: F11628  
Daily cal: F11629  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.01	64.5	0.80	21:50	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.66	71.1	21:51	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:35	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-4**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-10**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.45 g  
Matrix: Soil  
Origin: Site G

File: F11636  
Ret check: F11628  
Daily cal: F11629  
Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.11	-	00:00	U

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-4**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-10**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.45 g  
Matrix: Soil  
Origin: Site G

File: F11636  
Ret check: F11628  
Daily cal: F11629  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.32	69.4	0.83	21:52	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.76	73.5	21:53	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.87	21:37	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

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**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-6**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-1**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.61 g  
Matrix: Soil  
Origin: Site G

File: F11624  
Ret check: F11622  
Daily cal: F11623  
Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05	-		U

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-6**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-1**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.61 g  
Matrix: Soil  
Origin: Site G

File: F11624  
Ret check: F11622  
Daily cal: F11623  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.76	79.8	0.76	21:47	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.84	77.9	21:47	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.82	21:32	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-8**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-2**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.16 g  
Matrix: Soil  
Origin: Site G

File: F11625  
Ret check: F11622  
Daily cal: F11623  
Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.08	-		U

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-8**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-2**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.16 g  
Matrix: Soil  
Origin: Site G

File: F11625  
Ret check: F11622  
Daily cal: F11623  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.97	80.7	0.86	21:50	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.20	89.3	21:51	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	21:37	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-10**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-3**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.37 g  
Matrix: Soil  
Origin: Site G

File: F11626  
Ret check: F11622  
Daily cal: F11623  
Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	-	00:00	U

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-10**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-3**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.37 g  
Matrix: Soil  
Origin: Site G

File: F11626  
Ret check: F11622  
Daily cal: F11623  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.54	73.5	0.81	21:49	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.03	84.1	21:50	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.78	21:35	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.



**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-14**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-4**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.29 g  
Matrix: Soil  
Origin: Site G

File: F11627  
Ret check: F11622  
Daily cal: F11623  
Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.06	-	00:00	U

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-14**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-4**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.29 g  
Matrix: Soil  
Origin: Site G

File: F11627  
Ret check: F11622  
Daily cal: F11623  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	4.30	88.5	0.74	21:52	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.98	81.3	21:53	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.74	21:36	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 1613**

**Client Project: 8168**  
**Client Sample: CSH-16**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-5**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/23/95

Sample size: 10.48 g  
Matrix: Soil  
Origin: Site G

File: J10846  
Ret check: J10838  
Daily cal: J10839  
Initial cal: J071194

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.002	-		U

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 1613**

**Client Project: 8168**  
**Client Sample: CSH-16**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-5**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/23/95

Sample size: 10.48 g  
Matrix: Soil  
Origin: Site G

File: J10846  
Ret check: J10838  
Daily cal: J10839  
Initial cal: J071194

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.07	64.4	0.81	23:03	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.25	94.2	23:04	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.78	22:52	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

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**IONICS INTERNATIONAL, INC.**  
**(800) 4-DIOXIN**

10655 Richmond Ave., Ste. 150  
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Phone: (713) 972-1037  
Fax: (713) 784-1152

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-18**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-6**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.25 g  
Matrix: Soil  
Origin: Site G

File: F11632  
Ret check: F11628  
Daily cal: F11629  
Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.14	-	00:00	U

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-18**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-6**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.25 g  
Matrix: Soil  
Origin: Site G

File: F11632  
Ret check: F11628  
Daily cal: F11629  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	4.24	86.8	0.65	21:45	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.95	80.0	21:46	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.80	21:31	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-20**

**SAMPLE ANALYSIS**  
**REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-7**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.4 g  
Matrix: Soil  
Origin: Site G

File: F11633  
Ret check: F11628  
Daily cal: F11629  
Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	0.23	0.05	0.72	21:49	J

**REIDEL ENVIRONMENTAL SERVICES, INC.**  
**ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS**  
**BY METHOD 8280**

**Client Project: 8168**  
**Client Sample: CSH-20**

**SAMPLE ANALYSIS**  
**QC REPORT**

**Lab Project: 95-291**  
**Lab Sample: 3-91-7**

Date collected: 4/20/95  
Date received: 4/24/95  
Date extracted: 5/1/95  
Date analyzed: 5/18/95

Sample size: 10.4 g  
Matrix: Soil  
Origin: Site G

File: F11633  
Ret check: F11628  
Daily cal: F11629  
Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.73	77.6	0.78	21:48	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.95	81.3	21:49	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:33	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.